MDP-A7/800

RMT-M20A

SERVICE MANUAL

US Model
Canadian Model
MDP-800
E Model
MDP-A7

Photo : MDP-A7

SPECIFICATIONS

Type	CD/CDV/LD Player
Signal readout	Optical (Laser beam reflection)
Signal format system	EIA standard, NTSC color system
Playing time	

(minutes)

LD	CAV	30 cm (12 in) double-sided	60
		20 cm (8 in) double-sided	28
		20 cm (8 in) single-sided	14
	CLV	30 cm (12 in) double-sided	120
		20 cm (8 in) double-sided	40
		20 cm (8 in) single-sided	20
CD		12 cm (5 in) single-sided	74
		8 cm (3 in) single-sided	20
CDV		Audio portion	20
		Video portion	5
VSD		Video portion	5

Digital audio specifications

Frequency response	4 Hz to 20kHz (±0.3 dB)
Signal-to-noise ratio	More than 115 dB (EIAJ)*
Dynamic range	More than 99 dB (EIAJ)
Wow and flutter	Below measurement limit (±0.001% W.PEAK) (EIAJ)

Video specifications

Horizontal video resolution	425 lines
Signal-to-noise ratio	More than 50 dB

Input/output specifications

Video output 1, 2	1.0 Vp-p, 75 ohms, unbalanced
Audio output 1, 2	Stereo L, R Analog: 200 mVrms (1 kHz, 40% modulation) Digital: 200 mVrms (1 kHz, –20 dB)
S video output 1, 2	Luminance: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance: 0.286 Vp-p, 75 ohms, unbalanced
Audio digital output (optical)	–18 dBm, wavelength 660 nm
Headphone output	12 mW (8 ohms) Impedance = 8 ohms
CONTROL S IN	Mini jack
Mic jack	Standard jack 1mV (Impedance below 1 kilohm)

* Measured according to EIAJ (Electronic Industries Association of Japan) standards.

— Continued on next page —

使用時は添付資料も参照のこと
Refer to the additional documents.

CD VIDEO **CD/CDV/LD PLAYER**

SONY®

Power requirements

Power requirements	120V AC 60 Hz (MDP-800) 120/220/240 V AC adjustable, 50/60 Hz (MDP-A7)
Power consumption	45 W
Mass	10 kg (22 lb)
Dimensions	Approx. 430 × 120 × 429 mm (w/h/d) ($17 \times 4\frac{3}{4} \times 17$ in.)
Operating temperature	+5°C to +35 °C
Ambient humidity	5% to 90%

Remote Commander RMT-M20A

Principle of operation	Infrared pulse
Power requirements	3 V DC (2 size AA batteries)
Dimensions	Approx. 68 × 38.5 × 200 mm (w/h/d) ($2\frac{3}{4} \times 1\frac{9}{16} \times 7\frac{7}{8}$ in.)
Mass	Approx. 200 g (7 oz) (including batteries)

Supplied accessories

Remote Commander RMT-M20A (1)
Size AA (R6) batteries (2)
Audio/Video cable (phono plug 3↔phono plug 3) (1)
AC power cable (1) (MDP-800 only)
AC plug adaptor (1) (MDP-A7 only)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

WARNING !!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

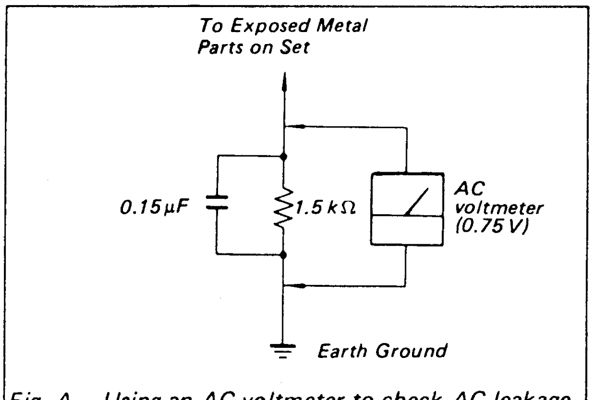

Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

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SECTION 1
GENERAL

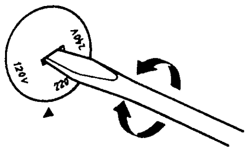
This section is extracted from instruction manual.

About Operating Voltage

Before operating the Multi Disc Player, make sure that the operating voltage of your unit is identical with that of your local power supply.

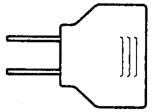
How to Determine the Correct Operating Voltage

- **MDP-800**
  The MDP-800 operates at 120 V AC 60 Hz only and does not have a voltage selector.
- **MDP-A7**
  The MDP-A7 has a voltage selector.
  Before operating the unit, find out the local voltage, and if necessary reset the selector at the rear of the Multi Disc Player to the voltage corresponding to your local power supply (120, 220 or 240 volts AC). The voltage selector of this unit is set to 220 V AC originally. When using in Malaysia, reset the selector to 240 V AC.
  To reset the voltage selector, disconnect the power cord and turn the selector with a blade screwdriver so that the arrow on the rear panel points to the appropriate voltage.



How to Use the AC Power Plug Adaptor (supplied with the MDP-A7)

- If the AC plug on your Multi Disc Player does not fit into the wall outlet, attach the supplied AC plug adaptor.



If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

Introduction

This introduction explains the organization of this manual and the principles of operation of the Multi Disc Player (MDP).

About These Instructions

Consumer electronics manuals have been notorious for being hard to comprehend. Having recognized this fact, we have made an attempt with this manual to avoid the usual pitfalls by trying to not pretend that the equipment being described is as simple as a bread toaster. Most likely this is your first Multi Disc Player and may be the only one you will own. With that in mind, we have striven to write the instructions in straight-forward English while trying to keep the procedures simple and systematic.

Differences between the models
This manual covers the MDP-800 and MDP-A7. Their differences are as follows:

	MDP-800	MDP-A7
Front panel		
• (LD) QUICK START button and indicator	QUICK START	LD QUICK START
• (CAV) STILL MODE button	STILL MODE	CAV STILL MODE
Rear panel		
• Voltage selector	not equipped	equipped
• AC power cable	detachable	not detachable
Supplied accessories		
• AC plug adaptor	not supplied	supplied

The illustrations in this manual are of the MDP-A7.

Because the Multi Disc Player is capable of playing laser discs (LDs), compact discs (CDs), and compact disc videos (CDVs), these instructions are divided into the equivalent of three "manuals"—one for each type of disc—with a fourth section providing instructions common to all discs and the fifth section for enjoying Karaoke.

The following summarizes what you'll find in this manual.

To Play a Laser Disc (LD)

This section covers all functions associated with playing LDs (page 13). Unique to LD play are Step Play, Multi Speed Play, Memory Play, Frame Search and Digital Picture functions. The MDP-800/A7 allows you to playback both sides of an LD without turning it over. The (LD) Quick Start function shortens the waiting time before an LD starts playing. The Digital Picture function allows you to flash, freeze or recall pictures as the normal sound continues.

To Play a Compact Disc (CD)

This section explains the operation of CDs and compares most closely to CDV audio operations (page 27).

To Play a Compact Disc Video (CDV)

This section covers procedures for CDV operation and shares many functions with CD play (page 34). There are no functions unique to CDV play in this Multi Disc Player.

To Play Any Disc (LD, CD, CDV)

Most of the procedures in this section fall into the advanced category (page 36) and are collected here because they are common to LD, CD and CDV play.

To Play Karaoke

This section is a short instruction for Karaoke playing (page 42).

What to Do First

Once you have read "Principles of Operation", then go ahead and connect up the Multi Disc Player to your television and/or stereo system using the connection diagrams on pages 11 and 12. After you have done this, you will be ready to play a disc. We suggest an LD or CD. Begin with the section, "How to Load and Play an LD (or a CD)".

The Principles of Operation

Beyond the playing of discs, the functions of the Multi Disc Player range from simple to advanced. Some functions vary depending on what type of disc (laser disc, compact disc, or compact disc video) you are playing. Nevertheless, keep in mind that the majority of the buttons have been designed to achieve a comparable effect for each type of disc you are playing. Therefore, the following paragraphs can briefly summarize what the basic Multi Disc Player functions allow you to do. (Control names that differ from the function name appear in uppercase letters.)

Primary Functions	are so-called because they entail the traditional functions of all disc players.
Variable Speed Functions	group operations according to the fact that they let you vary play speed, therefore, easily locate ("search") scenes or tracks as you watch or listen.
Repeatable Functions	are memory functions that let you play selections repeatedly, according to a play list or randomly. Playback can be started from the point you stopped at. Because the system finds and plays selections according to your request, some repeatable functions also serve as "search" functions.
Auxiliary Functions	are additional functions that simply add to what you can do with the Multi Disc Player.

Primary Functions

Power
Open/Close
Play
Pause
Stop
Side A/B

Variable speed Functions

Variable Speed Scan
  (JOG/SHUTTLE
  Ring)
Still/Step Scan
  (STILL/STEP)
Variable Speed Play
  (MULTI SPEED)
Digital Picture functions:
  (FLASH MOTION,
  STOP MOTION,
  PICTURE CALL)

Repeatable Functions

Pre-Programmed Play
  (AUTO PGM, PGM)
Intro Scan (INTRO)
Random Play
  (SHUFFLE)
Chapter/Track Search
  (ACS/AMS)
Frame/Time Search
  (FRAME/TIME)
Memory Play
  (MEMORY PLAY)
Auto Pause
  (AUTO PAUSE)
Repeat Play
  (1/SIDE/ALL, REPEAT,
  REPEAT A↔B)

Auxiliary Functions

Picture Enhance Function:
  (PICTURE ENHANCE)
Sound Quality Functions:
  (AUDIO MONITOR,
  ANALOG/CX)
On-Screen Display
  (DISPLAY)
Audio/Video Time Counter
  (AV TIME)
Karaoke Functions:
  (ECHO/MIC LEVEL)

Introduction to Your Player

The MDP-800/A7 Multi Disc Player integrates the functions of three machines into one: laser disc, compact disc, and compact disc video player. The entertainment potential afforded by the combined capabilities of this multi-faceted machine amounts to some 40 to 45 functions. Below is an explanation of the kinds of discs the Multi Disc Player plays.

The MDP-800/A7 Plays Three Classes of Optical/Digital Discs*

The MDP-800/A7 Multi Disc Player plays all three types of optical discs currently available for home entertainment. The following table illustrates their types and features.

Disc Class	Disc Logo	Disc Type	Size	Play Side	Play Time	
Laser Discs For movies, operas, and concerts	LASER DISC LaserVision	LD Single	8 in. (20 cm)	Single Side	CAV	14 min
					CLV	20 min
		8-inch LD	8 in. (20 cm)	Double Side	CAV	28 min
					CLV	40 min
		12-inch LD	12 in. (30 cm)	Double Side	CAV	1 hr
					CLV	2 hr
Compact Discs For music	COMPACT disc DIGITAL AUDIO	CD Single	3 in. (8 cm)	Single Side	20 min	
		CD	5 in. (12 cm)	Single Side	74 min	
Compact Disc Videos For music videos and educational material (Digital Audio)	CD VIDEO	CDV	5 in. (12 cm)	Single Side	Video+Audio 5 min Audio 20 min	
	VIDEO SINGLE DISC	VSD	5 in. (12 cm)	Single Side	Video + Audio 5 min	

Multi Audio Discs

digital AUDIO MULTI AUDIO

On laser discs bearing this logo, the analog tracks are recorded in multiplex, and the digital tracks are recorded in stereo.

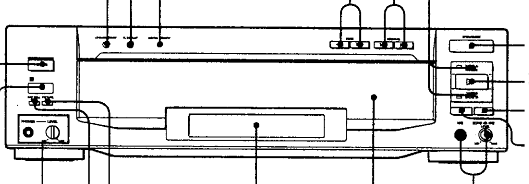
---

* *These apply only to those discs recorded in the NTSC standard. The MDP-800/A7 cannot play CED, VHD discs or PAL video discs, CD-ROM, CD-GRAPHICS, CD-I discs or aluminum-lined discs.*

Installation and Connection

Front and Rear Panel Controls and Supplied Accessories

Front Panel



DIGITAL MEMORY indicator
Lights up when the digital memory function is activated.

FL DISPLAY button
Each time you press the button, the front panel display turns on/off.

LD QUICK START (MDP-A7) or QUICK START (MDP-800) button and indicator
To turn off the indicator, press the button while in stop mode.
(See page 16.)

POWER button and indicator
ON: Green
OFF: Off (MDP-800)
STANDBY: Red (MDP-A7)

Remote Commander Sensor

PHONES jack and LEVEL control
To listen with headphones, plug stereo headphones into the PHONES jack. Adjust the volume with the LEVEL control.

CAV STILL MODE (MDP-A7) or STILL MODE (MDP-800) button
Press the button to view a finer freeze frame on a CAV disc.

PICTURE CALL button and indicator
Press the button to recall a picture stored in the digital memory of the player.

◀◀/▶▶ SCAN buttons
Press the right button to scan forward; press the left button to scan backward.

I◀◀/▶▶I ACS/AMS buttons
Press the right button to advance one chapter/track; press the left button to go back a chapter/track.

SIDE A/SIDE B button and indicators
Press the upper or lower side of the button to select the playing side of an LD.

≜ OPEN/CLOSE button

▶ PLAY button

■ STOP button

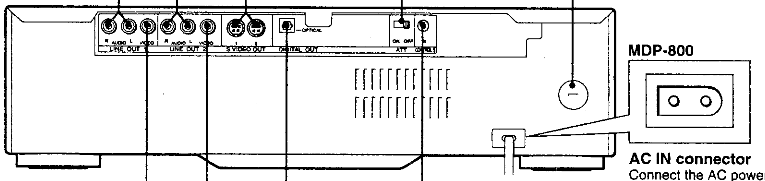
II PAUSE button

MIC jack and ECHO/MIC LEVEL controls
To play Karaoke, plug a microphone into the MIC jack, Adjust the microphone volume and echo level with the controls.

Front Cover
Automatically slides down when you press the OPEN/CLOSE (≜) button, and the disc tray comes out.

Front Panel Display

Rear Panel



S VIDEO OUT 1, 2
Connect the YC-15V Cable (not supplied).

LINE OUT 1, 2
Audio Connectors

LINE OUT 1, 2
Video Connectors

DIGITAL OUT
Fiber Optical Connector

ATT (Attenuator) switch
Distorted singing sounds can be corrected by setting this switch to ON. This will lower the volume.

Voltage selector
With the MDP-A7 only
(See page 4.)

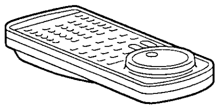
AC IN connector
Connect the AC power cable (supplied).

CONTROL S IN jack (mini type)
Use this jack if your TV etc. has a CONTROL S output jack.
- By connecting this jack to the CONTROL S output jack on your TV, you can control this player with the Remote Commander pointed at the TV.
- Connect the RK-G69 cable (not supplied).
- If you plug one end of the cable into the player and leave the other end unplugged, the Remote Commander will not work.

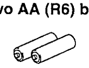
Accessories

Make sure the shipping box contains the following accessories:

RMT-M20A Remote Commander



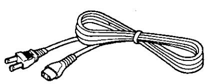
Two AA (R6) batteries



Audio/Video connecting cable
(phono 3↔ phono 3)

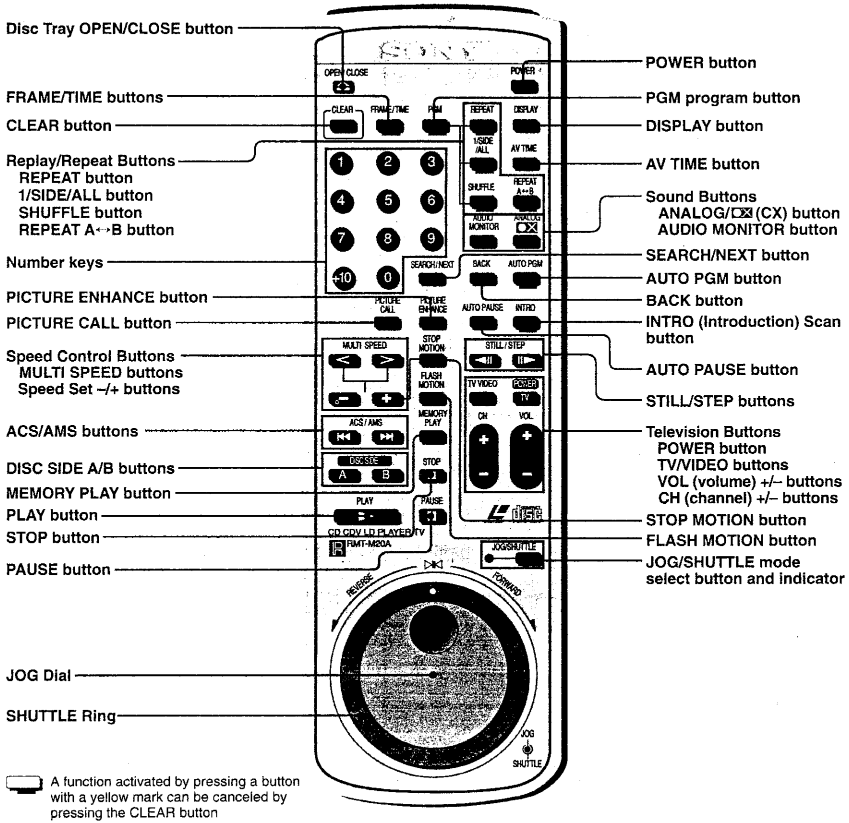
AC plug adaptor supplied with the MDP-A7
(See page 4.)

AC power cable supplied with the MDP-800



Controls on the Remote Commander

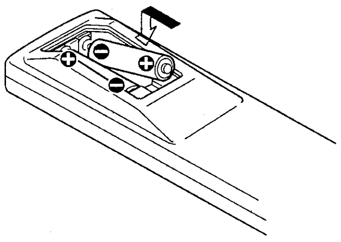
You can use the Remote Commander (Remote) to control the player or the identical buttons on the player itself.


Disc Tray OPEN/CLOSE button
FRAME/TIME buttons
CLEAR button
Replay/Repeat Buttons
REPEAT button
1/SIDE/ALL button
SHUFFLE button
REPEAT A↔B button
Number keys
PICTURE ENHANCE button
PICTURE CALL button
Speed Control Buttons
MULTI SPEED buttons
Speed Set –/+ buttons
ACS/AMS buttons
DISC SIDE A/B buttons
MEMORY PLAY button
PLAY button
STOP button
PAUSE button
JOG Dial
SHUTTLE Ring
POWER button
PGM program button
DISPLAY button
AV TIME button
Sound Buttons
ANALOG/DX (CX) button
AUDIO MONITOR button
SEARCH/NEXT button
AUTO PGM button
BACK button
INTRO (Introduction) Scan button
AUTO PAUSE button
STILL/STEP buttons
Television Buttons
POWER button
TV/VIDEO buttons
VOL (volume) +/– buttons
CH (channel) +/– buttons
STOP MOTION button
FLASH MOTION button
JOG/SHUTTLE mode select button and indicator

A function activated by pressing a button with a yellow mark can be canceled by pressing the CLEAR button

To Activate the Remote Commander

Open the back cover, and insert two size AA (R6) batteries according to the polarity indicated in the illustration. The batteries will last for about 6 months. If the range of the Remote Commander becomes noticeably short, replace all the batteries with new ones. If the Remote Commander is not to be used for a long time, remove the batteries to avoid damage from possible battery leakage.



Insert two size AA (R6) batteries

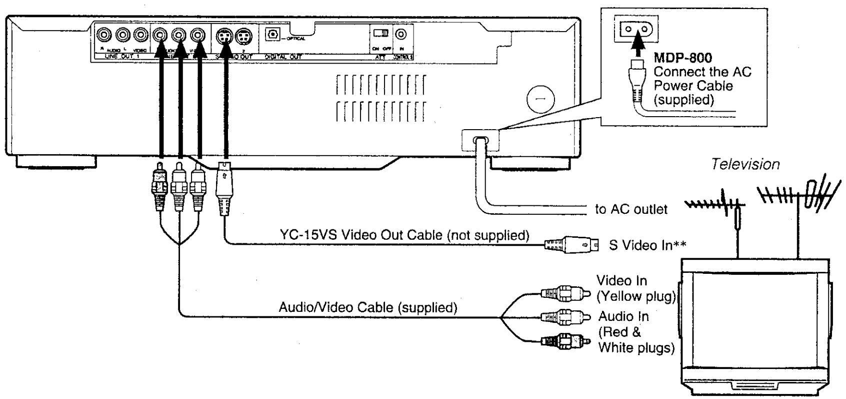
Remote Commander Precautions

- Do not let sunlight or powerful artificial light fall directly on the Remote Commander sensor on the front panel (of the player) as it may interfere with Remote Commander operation.
- Use size AA (R6) batteries only.

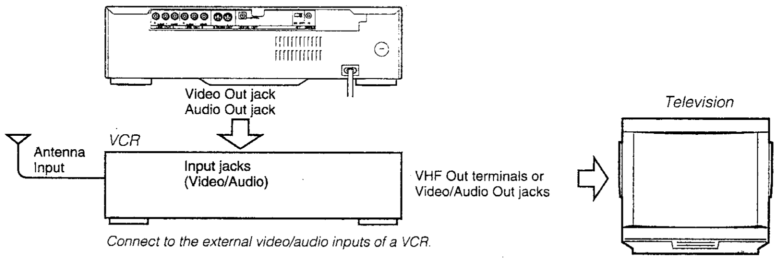
How to Connect the Television

To play LDs or CDVs, hook up a television to the Multi Disc Player. Take out the supplied audio/video connecting cable (yellow, red and white plugs). Use this to connect the player to the television.* Once you have hooked-up the television, set the input selector on the TV to "Video". Before connecting or disconnecting any of the cables, turn off all equipment.

Television Hook-Up


MDP-800
Connect the AC Power Cable (supplied)
Television
to AC outlet
YC-15VS Video Out Cable (not supplied)
S Video In**
Video In (Yellow plug)
Audio In (Red & White plugs)
Audio/Video Cable (supplied)

Television/VCR Hook-Up


Video Out jack
Audio Out jack
VCR
Antenna Input
Input jacks (Video/Audio)
VHF Out terminals or Video/Audio Out jacks
Television

Connect to the external video/audio inputs of a VCR.

Connecting Precautions:

- Make sure all equipment is turned off before connecting or disconnecting any cables.
- Connection methods may differ; when in doubt about a connection, consult the TV or VCR manufacturer's manual.
- If the sound or picture is disturbed by noise, try moving the equipment farther apart.
- Firmly insert plugs into the jacks. A loose connection may cause noise.
- To prevent later interference with TV broadcast reception, turn off all equipment connected but not currently in use.

---

* *If the TV has only a monaural phono jack for audio input, use a VMC-910MS/915MS Connecting Cable (not supplied).*

** *If your TV has an S Video Input jack, obtain a YC-15V S Video Connecting Cable, and use this instead of the supplied video cable to connect your television to the S VIDEO OUT connector on the Multi Disc Player.*

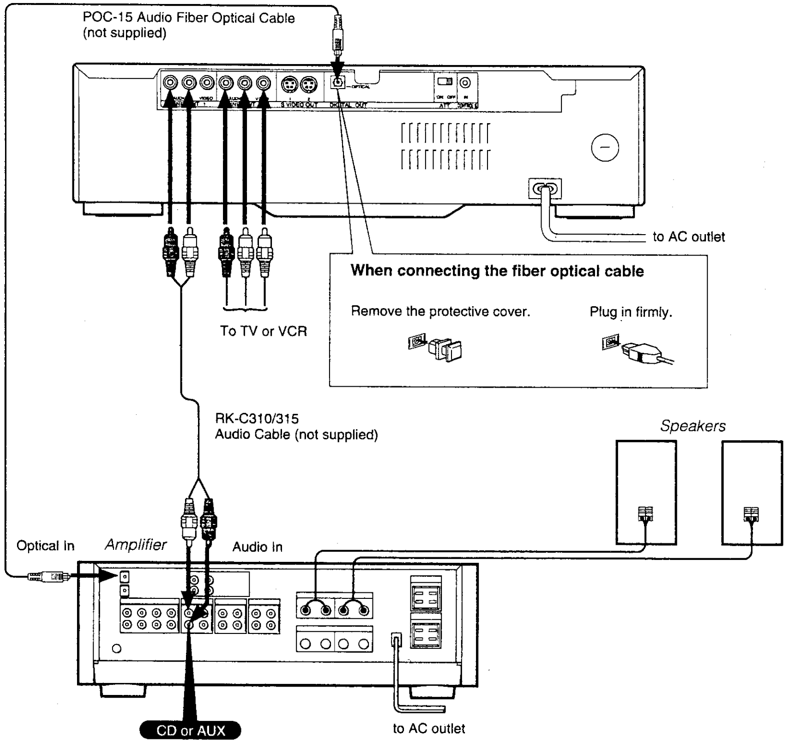
How to Connect Audio Equipment

To achieve full stereo sound from your Multi Disc Player, hook up a stereo system following the diagram below. Use an RK-C310 (or RK-C315) audio connecting cable (not supplied) to connect the Multi Disc Player to your amplifier or receiver. Before connecting or disconnecting any of the below cables, turn off all equipment.

To Achieve Digital Sound

Digital sound recordings afford high quality sound reproduction, (see Glossary, page 46). If your amplifier also has a fiber optical connector, or if you have a D/A converter unit with optical input, according to the diagram below, connect the POC-15 Audio Fiber Optical Cable (not supplied) between the DIGITAL OUT connector on the Multi Disc Player and the amplifier or D/A converter. Note that digital signals are always output from the Multi Disc Player except when you play discs that are not digitally recorded. Such discs output analog sound from LINE OUT only.
Sound from a microphone cannot be output from the DIGITAL OUT connector. To output sound from a microphone, connect the player to the amplifier with an Audio Cable (Red & White plugs).

Audio Equipment Hook-Up


POC-15 Audio Fiber Optical Cable (not supplied)
to AC outlet
When connecting the fiber optical cable
Remove the protective cover.
Plug in firmly.
To TV or VCR
RK-C310/315 Audio Cable (not supplied)
Speakers
Optical In
Amplifier
Audio In
CD or AUX
to AC outlet

Connection Precautions

- Make sure all equipment is turned off before making any of the above connections.
- Firmly insert plugs into the jacks. A loose connection may cause noise.
- When listening to a radio broadcast, switch off the Multi Disc Player to get better reception.

To Play a Laser Disc

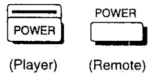
This section shows you how to conduct all the procedures associated with playing LDs.

How to Load and Play an LD (Laser Disc)

After you have connected the Multi Disc Player to the TV and/or stereo system, you can begin playing a laser disc. Locate the POWER, OPEN/CLOSE, and PLAY buttons on the Remote Commander or the front panel of the player.

Do not transport the player while playing a disc as it may cause damage to the disc.

1 Turn on the multi disc player.

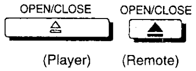

POWER
POWER
(Player)
(Remote)

Press the POWER button on the player or Remote commander (Remote).

2 Turn on the TV and stereo system.

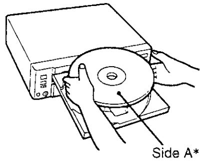
TV: Set the input selector on the TV to **"Video"**.
Stereo System: Turn on the amplifier or receiver and select CD or AUX for audio output.

3 Open the disc tray.


OPEN/CLOSE
OPEN/CLOSE
(Player)
(Remote)

Press the OPEN/CLOSE (≜) button.
The front cover of the player slides down and the disc tray comes out.

4 Place a disc on the tray.



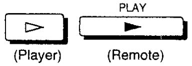
Carefully center a single disc on the tray. If you insert more than one disc, or if the disc is not seated properly, it may not play or damage the unit.

What is this indication?

NO dISC

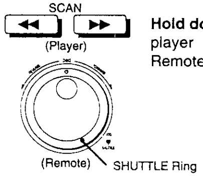
This indication appears in the front panel display when the tray is empty.

5 Start playback.


PLAY
(Player)
(Remote)

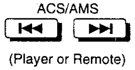
Press the PLAY (▶) button.**
The disc tray closes and the upper side of the disc starts playing.

To Advance or Reverse ....


SCAN
(Player)
(Remote)
SHUTTLE Ring

Hold down the SCAN (◀◀/▶▶) button on the player or **rotate the SHUTTLE Ring** on the Remote.

To Advance or Go Back One Chapter at a Time ....


ACS/AMS
(Player or Remote)

Press the ACS/AMS (⏮/⏭) button.

---

* The player determines that the upper side of the disc is side "A," and the other side is "B," regardless of the label "A" or "B" printed on the disc.

** When playback of the upper side of the disc (side A) ends, the other side (side B) starts playing automatically. While the playing side is changing, the last frame on side A appears. If nothing is recorded on side B, playback stops.

To Select the Disc Side ....

DISC SIDE A B
(Player) (Remote)

Press the (DISC) SIDE A button to play the upper side of the disc from the beginning.

Press the (DISC) SIDE B button to play the other side of the disc from the beginning.*

To Interrupt Play ....

PAUSE ❚❚
(Player or Remote)

Press the PAUSE (❚❚) button. The sound mutes and the picture freezes. To resume playback, press PAUSE (❚❚) or PLAY (►).

To Stop Playback ....

STOP ■
(Player or Remote)

Press the STOP (■) button.
To play again from the beginning of the disc, press PLAY (►). If you want to resume playback from the point you stopped at, press MEMORY PLAY on the Remote.

To Stop Play and Remove the Disc ....

OPEN/CLOSE ≜ OPEN/CLOSE ▲
(Player) (Remote)

Press the OPEN/CLOSE (≜) button. Remove the disc and press ≜ again to close the empty tray.

To Have the Player Pause Before Starting ....

PAUSE ❚❚
(Player or Remote)

Press the PAUSE (❚❚) button after doing step 4 on page 13.
The tray closes and the player waits at the start of the disc until you press PLAY (►) or PAUSE (❚❚). If you want to play side B, press (DISC) SIDE B, then PAUSE (❚❚).

To Get Sharp/Soft Image ....

PICTURE ENHANCE
(Remote)

Press the PICTURE ENHANCE button on the Remote to select the mode. The selected mode appears on the TV screen (lower left-hand corner) for three seconds. Each time you press the button, the mode changes in the order of SHARP, SOFT and STANDARD.

SHARP: Sharp picture
Refines the images
SOFT: Soft picture
Reduces screen noise
STANDARD: Standard picture

Even if you turn off the power, the mode will remain stored in the player's memory. If you unplug the power cord, the mode will be reset to STANDARD.

---

* *When playback of side B ends, the player stops playing.*

To Play a Stereo LD or a Second Audio Program (SAP) LD ....

PLAY ► → AUDIO MONITOR
(Player or Remote) (Remote)

Press the PLAY (►) button, then press the AUDIO MONITOR button on the Remote.
This function alternates the sound output on a disc that has been recorded with two sound tracks, such as bilingual discs.

The procedure below indicates how the output and the display changes with each press.
The active track appears for three seconds on the TV screen. It always appears in the front panel display.
When you select 1/L (or 2/R), the sound of the left (or right) channel is output from both speakers.

Procedure	Screen message	Output Sound	
		Stereo Disc	SAP Disc
1 Press PLAY (►).	No message	Stereo (Both channels)	Soundtrack 1 (left channel) Soundtrack 2 (right channel)
2 Press AUDIO MONITOR.	1/L	Left channel	Soundtrack 1 (left channel)
3 Press AUDIO MONITOR again.	2/R	Right channel	Soundtrack 2 (right channel)
4 Press AUDIO MONITOR again to return to stereo status.	1/L 2/R	Stereo (Both channels)	Soundtrack 1 (left channel) Soundtrack 2 (right channel)

To Switch From Digital to Analog Sound ....

ANALOG ◯⊠
(Remote)

Press the ANALOG/◯⊠ button on the Remote to switch the player to analog or digital sound. Digital affords a better quality sound reproduction. If the LD contains a digital sound signal, the player automatically sends that output to the amplifier or receiver. To switch to analog sound, press the ANALOG/◯⊠ button on the Remote. "♪ ANALOG" appears on screen for three seconds. To return to digital sound, press the ANALOG/◯⊠ button until "♪ DIGITAL" appears on screen.
With certain discs there may be a difference in volume.

Discs With a ◯⊠ (CX) Label ....

ANALOG ◯⊠
(Remote)

Discs bearing the ◯⊠ label are recorded with the CX noise reduction system, which gives lower noise levels and higher dynamic range on analog sound. The player detects most ◯⊠ discs and when you switch to analog sound, it activates the CX noise reduction system automatically. When playing a ◯⊠ disc which does not contain a code to activate the CX noise reduction system, press the ANALOG/◯⊠ button until "CX ON" appears on screen. The CX noise reduction system will be activated.

Understanding Displays and Messages When Playing LDs

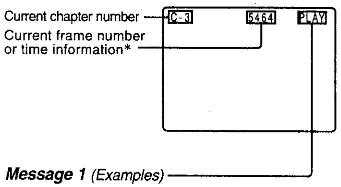
You can determine the player operating status or disc information in one of two ways: (1) by displaying the information on the TV screen, or (2) by looking at the front panel display. Locate the DISPLAY button on the Remote Commander.

To View On-Screen Information. . .

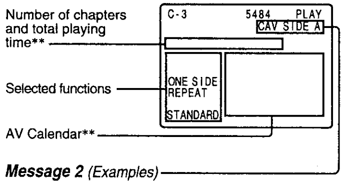
DISPLAY

Press DISPLAY on the Remote.
Each time you press DISPLAY, messages appear on the TV screen as shown below.
The tables below are keys to the messages that appear on the right of the screen.

Press DISPLAY once.


Current chapter number
Current frame number or time information*
C-3
5464
PLAY

Press DISPLAY twice.


Number of chapters and total playing time**
Selected functions
AV Calendar**
C-3
5484
PLAY
CAV SIDE A
ONE SIDE
REPEAT
STANDARD

Message 1 *(Examples)*

Screen Display	Current Status of the Player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing LD
STOP	Operation stopped
PAUSE	Operation momentarily stopped
⏩ / ⏪	Variable speed (SHUTTLE Ring) scan
SEARCH	Searching
▶ X 1/2	Scanning at 1/2-speed

Message 2 *(Examples)*

Screen Display	Currently Playing
CAV SIDE A	Standard-play disc side A
CAV SIDE B	Standard-play disc side B
CLV SIDE A	Extended-play disc side A
CLV SIDE B	Extended-play disc side B
1/L	First soundtrack/left channel
2/R	Second soundtrack/right channel
♪ DIGITAL	Digital sound
♪ ANALOG	Analog sound

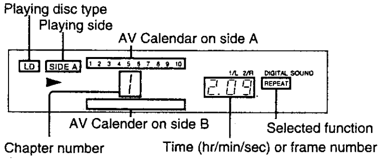
To turn off the display, press DISPLAY again.

---

* *Discs not indicating time data to the second indicate instead as two-digit numbers such as, "22:".*
** *Appears when the (LD) QUICK START indicator is off (for an LD with TOC).*

Reading the Front Panel Display

The illustration to the right is an example of what is displayed on the front panel of the player.


Playing disc type
Playing side
AV Calendar on side A
LD
SIDE A
1 2 3 4 5 6 7 8 9 10
1/L 2/R DIGITAL SOUND
REPEAT
AV Calender on side B
Selected function
Chapter number
Time (hr/min/sec) or frame number

To View AV Calendar. . . . .

When playing an LD containing TOC (Table of Contents) data, the AV Calendar is available.
Press the (LD) QUICK START button on the player while in stop mode to turn off the indicator on the button, then press PLAY (▶). The AV Calendar on disc side A will be displayed. To view the AV Calendar on side B, press (DISC) SIDE B while the (LD) QUICK START indicator is off, the AV Calendar on disc side B will be displayed. The calendar shows information on the total number of selections on the disc or those programmed to play. As selections are played, the corresponding numbers in the AV Calendar disappear.

To Turn Off the Front Panel Display. . . . .

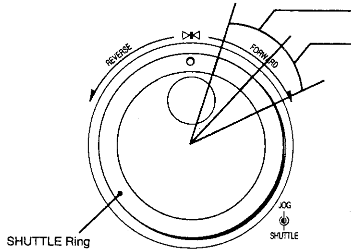
Press FL DISPLAY on the player. Each time you press FL DISPLAY, the display turns on/off. When the front panel display is turned off, the blue TV screen during stop turns to gray.

How to Search for a Particular Scene

To find a scene, play the disc in reverse or forward at high speed. The sound is automatically muted during search play. Locate the SHUTTLE Ring on the Remote Commander or the SCAN (◀◀/▶▶) buttons on the front panel of the player.

To Change Speed and Direction Gradually (Variable Speed Scan)*

Rotate the SHUTTLE Ring on the Remote in the forward or reverse direction.


REVERSE
FORWARD
JOG
SHUTTLE
SHUTTLE Ring
Scan at 10 times the normal speed
Scan at 30 times the normal speed
(Same speeds are available in the reverse direction.)

The play speed changes according to the degree you rotate the SHUTTLE Ring.
The illustration indicates the approximate speeds.
By holding down SCAN (◀◀/▶▶) on the player, you can scan scenes at a constant speed.

To Resume Normal Play. . . . .

Release the SHUTTLE Ring or SCAN (◀◀/▶▶) button.

---

* *A certain amount of visual noise and instability is inevitable with all variable speed operations.*

How to Search by Chapter Numbers—Chapter Search

LDs are divided into sections called "chapters". Chapters are usually listed on the jacket or label of the disc. By entering the desired chapter number, you can have the player find the chapter and play it. Use ACS/AMS (⏮/⏭) — Automatic Chapter Searching/Automatic Music Sensing—to advance or reverse one chapter at a time.
Locate the number keys on the Remote Commander and the ACS/AMS (⏮/⏭) buttons on the Remote Commander or player.

To Locate a Particular Chapter (Chapter Search)

For example, to locate chapter 8, press "8" on the Remote.

⑧

Press one of the number keys on the Remote corresponding to the chapter you want to play.

The player starts searching for Chapter 8.

```
CHAPTER 8        SEARCH
             CAV SIDE A
```

The player finds Chapter 8 and starts playing from the beginning of Chapter 8.

To Enter a Number Greater Than 10*

Do this to make a numerical sum. For example, to enter 14, press +10 and 4; to enter 30, press +10, +10, +10 and 0.

(+10) → (X) **Press +10 and one of the number keys.**

(+10) → ④ ...."14"

(+10) → (+10) → (+10) → ⓪ ...."30"

If you make a mistake while entering, press CLEAR, then enter the correct numbers.
The current chapter number appears in the front panel display.

To Check the Current Chapter Number

DISPLAY

Press DISPLAY on the Remote to display the chapter number (upper left-hand corner) on screen. When the (LD) QUICK START indicator is off, you can also look at the AV Calendar (see page 16) for the chapters remaining to be played on the LD (with TOC) by pressing DISPLAY twice.

To Advance or Go Back One Chapter at a Time (Skip Search)

ACS/AMS ⏮ ⏭

Press ACS/AMS (⏮) once to return to the beginning of the current chapter.

Press ACS/AMS (⏭) to advance to the beginning of the next chapter.

Press ACS/AMS (⏮) twice before the picture reappears to return to the beginning of the previous chapter.

Hold down ACS/AMS (⏮ or ⏭) for continuous skip search.

To Resume Normal Play**

Release ACS/AMS (⏮ or ⏭).
The player automatically resumes play from the beginning of the selected chapter.

---

* *Chapter Search does not function properly if the disc does not contain chapter numbers, or the chapter number entered does not exist.*

** *In addition to normal play mode, you can conduct Chapter Search and Skip Search while in Freeze-Frame, Variable Speed Play, Repeat or Pause mode. When the specified chapter appears after the search, play continues in the same mode.*

How to Search by Frame Number or Time—Frame/Time Search

Video scenes are counted as a series of still pictures or "frames". The player keeps track of the number of frames that have been played from the beginning of the disc to the current position. Similarly, the player also keeps track of the elapsed playing time from the beginning of the disc. To play from a particular frame or time, use the Frame/Time Search function. Locate the FRAME/TIME, SEARCH/NEXT buttons, and number keys on the Remote Commander.

On CAV (standard-play) discs, enter a frame number. On CLV (extended-play) discs, enter the time.*

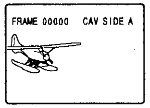
To Enter the Elapsed Frame or Time

1 **Press FRAME/TIME on the Remote.**

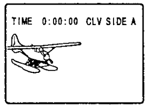
FRAME/TIME

The screen displays "00000" (for CAVs) or "0:00:00" (for CLVs).

CAV
(standard-play) disc



CLV
(extended-play) disc



2 **Enter the desired multi-digit number corresponding** to the frame or time you want to find.

Enter five digits for CAVs.
Enter four digits for CLVs displaying the time to the second.
Enter two digits for CLVs displaying the time to the minute.

Sample Entry for CAV Discs
To locate frame number 12340, press the number keys in the order shown on the right:

① → ② → ③ → ④ → ⓪

Sample Entry for CLV Discs
To locate the 12-minute, 5-second point, press the number keys in the order shown on the right:

① → ② → ⓪ → ⑤

If you pressed the wrong key, press BACK to clear the number, then enter the correct number.

3 **Press SEARCH/NEXT on the Remote**

SEARCH/NEXT

Play starts from the time or frame specified in step 2.

To Check the Frame/Time Numbers

DISPLAY

The current frame or current time numbers appear on screen when you **press DISPLAY**. You can also find them on the front panel display.

To Cancel Frame/Time Search

CLEAR

Before pressing SEARCH/NEXT, **press CLEAR.**

In addition to normal play mode, you can conduct Frame/Time Search while in Freeze-Frame, Variable Speed Play, Repeat or Pause mode. When the specified frame or time appears after the search, play continues in the same mode.

---

* *"CAV" or "CLV" should be noted somewhere on the disc jacket.*

How to Search Using Variable Speed Play

To find a scene, you can play the disc in reverse or forward at varing speeds. There are two ways; using JOG/SHUTTLE and Multi Speed. Locate the JOG/SHUTTLE mode select button, JOG/SHUTTLE Ring, DISPLAY, MULTI SPEED and Speed Set –/+ buttons on the Remote Commander.

To Change Speed and Direction (Using JOG/SHUTTLE)

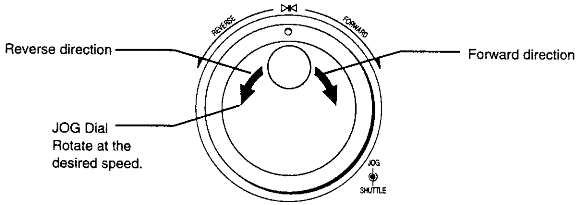
1 **Press JOG/SHUTTLE on the Remote.**

JOG/SHUTTLE

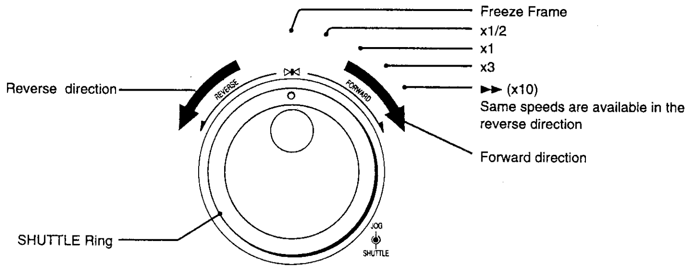
The indicator lights up* and the frame freezes. If you use the JOG/SHUTTLE Ring on the Remote, press PAUSE (❚❚) to freeze the frame.

2 **Rotate the JOG Dial or the SHUTTLE Ring in the forward or reverse direction.**

When using the JOG Dial .... One rotation of the dial corresponds to one picture frame. The speed varies according to the speed you rotate the dial at. Frame-by-frame, x1/2 the normal, and normal speed are available.



When using the SHUTTLE Ring .... The speed varies according to the degree you rotate the ring. The illustration below indicates the approximate positions of each speed.



The frame freezes when you release the JOG Dial or the SHUTTLE Ring.

3 **Press PLAY (►).**

PLAY

Normal playback resumes.

---

* *When the JOG/SHUTTLE mode select indicator is not lit, only ×10 and ×30 the normal speed are available with the SHUTTLE Ring (See page 17).*

To Change Speed and Direction (Multi Speed)

1 **Press DISPLAY on the Remote.**

DISPLAY

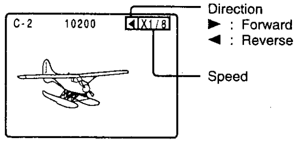
2 **Press MULTI SPEED on the Remote to select the direction.**

MULTI SPEED

To reverse <
To advance >
The play speed and direction appear on screen.

3 **Press Speed Set –/+ on the Remote to select the speed.**

To reduce speed –
To increase speed +



4 **Press PLAY (►).**

PLAY

Normal playback resumes.

Discs with Automatic Picture Stop Code
When an automatic picture stop code (found on educational discs) is encountered during X1 or less variable speed play, the unit automatically stops at that frame. To resume playback, press PLAY, MULTI SPEED, or turn the SHUTTLE Ring.

How to Play Frame-by-Frame

Once you have found a particular scene, you can examine the progression of that scene by advancing or reversing the action one frame at a time (Step Play), or freezing the action into a still picture (Freeze Frame). Locate the PAUSE, and STILL/STEP buttons on the Remote Commander.

To Play One Frame at a Time (Step Play)

1 **Press PAUSE (❚❚) once.**

PAUSE

The frame freezes (Pause mode).

2 **Press STILL/STEP on the Remote repeatedly.**
For continuous frame-by-frame action, press STILL/STEP once, then hold down STILL/STEP.

STILL/STEP

Each press shifts the image one frame backward or forward.

To reverse ◄❚❚
To advance ❚❚►

In addition to pause mode, you can achieve Step Play while the player is in play mode by pressing one of the STILL/STEP buttons while the disc is playing.

To Freeze the Action (Freeze Frame) ....

PAUSE

Press PAUSE (❚❚) once.

To Resume Normal Play...........

PLAY

Press PLAY (►).

To View a Finer Picture on a CAV Disc ....

PAUSE → CAV STILL MODE

When you view a freeze frame from a scene on a CAV disc that is relatively motionless, press PAUSE (❚❚), then the (CAV) STILL MODE button on the player to turn off the DIGITAL PICTURE indicator. You can then view a finer picture which is not output through the player's memory.

How to Use Digital Picture Functions

During Variable Speed Play, Step Play or Freeze Frame, the sound is automatically muted. However, if you use the player's unique digital picture functions, you can view successive flashing pictures (Flash Motion) or a freeze picture (Stop Motion) as the normal sound continues. You can also recall a picture stored in the digital memory of the player at any time, for example, in stop mode, when no disc is loaded, while playing another LD, CD, or CDV (Picture Call). Locate the FLASH MOTION, STOP MOTION and Picture Call buttons on the Remote Commander.

To Flash Pictures (Flash Motion)......................

FLASH MOTION

Press FLASH MOTION on the Remote.
The DIGITAL MEMORY indicator on the player lights up. Still pictures flash in succession at specified intervals. During this, the sound is played normally.

To Change the Interval of the Flashing Pictures..................

– +

Press Speed Set (–/+) to extend or shorten the interval of the flashing pictures.

To extend –

To shorten +

To Resume Normal Play...........

PLAY ►

Press PLAY (►).
To switch to the STOP MOTION mode, press STOP MOTION.

To See a Freeze Picture with Sound (Stop Motion)..............

STOP MOTION

Press STOP MOTION on the Remote.
The DIGITAL MEMORY indicator lights up and the picture freezes. During this, the sound is played normally.
The disc continues to be played even while you see only one still picture. If you press STOP MOTION again, the picture advances to correspond with the sound track.

To Resume Normal Play...........

Press PLAY (►).
To switch to the STOP MOTION mode, press STOP MOTION.

To Recall a Picture Stored in the Digital Memory (Picture Call)

1 **Press PAUSE (❚❚) at the picture you want to store.**

PAUSE ❚❚

The DIGITAL MEMORY indicator lights up and the picture is stored in the players memory.*

2 **You can then play, stop, or replace the disc.**

3 **Press PICTURE CALL on the Remote.****

PICTURE CALL

The picture stored in the memory appears. To make the picture disappear, press PICTURE CALL again.

What Picture is Stored in the Digital Memory?
The player automatically stores the last picture viewed while the DIGITAL MEMORY indicator is lit by such operations as shown below:

- When you press PAUSE (❚❚)
- Flash Motion, Stop Motion, Intro Scan or Search Play
- Scan, Variable Speed, Step Play on a CLV, VSD or video section of CDV disc
- When an LD's playing side is automatically changed from side A to B

---

* *The picture stored in the digital memory is cleared when the player is turned off.*
** *Picture Call is not operable during Stop Motion or Flash Motion play.*

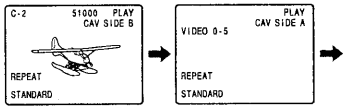
How to Replay the Same LD Selections

These instructions show you how to program the player to play the same scenes over and over until you signal the repetition to stop. You can replay both sides, a single side, a single chapter or a section between one pair of points on the disc. Locate the REPEAT, 1/SIDE/ALL, and the REPEAT A↔B buttons on the Remote Commander.

To Repeat Both Sides of the Disc.................................

REPEAT

Press REPEAT on the Remote.
"REPEAT" lights up in the front panel display. When the player reaches the end side B, it returns to the beginning of side A and starts playing again.



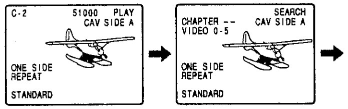
At the end of side B

Returns to the beginning of side A.

To Repeat the Current Side of the Disc (One Side Repeat)........

1/SIDE /ALL → 1/SIDE /ALL → REPEAT

Press 1/SIDE/ALL twice, then REPEAT on the Remote.
"REPEAT" and "1 SIDE" light up in the front panel display. When the player reaches the end of one side, it returns to the beginning and starts playing the side again.



At the end of one side

Returns to the beginning of the side

To Repeat the Current Chapter (Single Repeat)..........

1/SIDE /ALL → REPEAT

Press 1/SIDE/ALL once, then REPEAT.
"REPEAT" and "1" light up in the front panel display. The current chapter repeats continuously.

To Cancel Repeat Play............

REPEAT

Press REPEAT.

To Cancel One Side Repeat.............................

1/SIDE /ALL → REPEAT

Press 1/SIDE/ALL once, then REPEAT.*

To Cancel Single Repeat...........

1/SIDE /ALL → 1/SIDE /ALL → REPEAT

Press 1/SIDE/ALL twice, then REPEAT.*

---

* *You can also cancel Repeat, One Side Repeat and Single Repeat by pressing CLEAR.*

To Repeat One Section of the Disc (Repeat A↔B)

1 Go back to the start of the scene you want to replay.

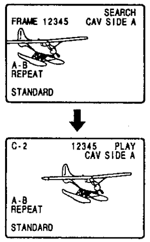
2 **Press REPEAT A↔B** on the Remote at the beginning of where you want replay to begin. This marks where replay is to begin. The "REPEAT" and "A-" light up, and "B" indication flashes.

REPEAT A↔B

3 Let the player run to the end of the scene you want to repeat.

4 **Press REPEAT A↔B again.** This marks where replay is to end.

REPEAT A↔B



"REPEAT" and "A–B" light up in the front panel display.
The player repeatedly plays the scene between the two points selected.

To Cancel Repeat A↔B ....

CLEAR

Press CLEAR.

To Replay From a Specific Point on the Disc (Memory Search)

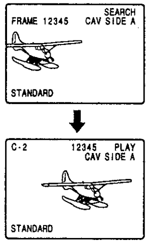
1 Go to the point from where you want to start playback.

2 **Press REPEAT A↔B** to mark the starting point.

REPEAT A↔B

3 **Press CLEAR** to turn off the indication "A–B REPEAT".
(Thus not setting an end point.)

CLEAR



4 **Press SEARCH/NEXT** on the Remote at any point you like on the disc.

SEARCH/NEXT

The player goes to the point you marked and starts playing.*

---

* *The point marked "A" from where you can resume playback is cleared if you open the disc tray, turn off the player, carry out a Frame/Time Search or Chapter Search.*

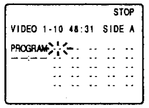
How to Play Only Certain Chapters—Programmed Play

You can choose, in any order you like, the chapters the Multi Disc Player plays. This play list is stored in the player until you either remove the disc or turn off the power. After playing all the selections, the player stops and waits for your next command. You can program up to 25 chapters for sides A and B combined. Locate the number keys, DISC SIDE A/B, PGM and PLAY buttons on the Remote Commander.

For example, you want to play chapters 1, 2, 3 on side A, chapter 10 on side B, then stop playing momentarily. Continuing with chapter 4 on side B, then back to side A to play 7 (in that order).

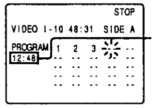
1 **Press PGM on the Remote.**
"PROGRAM --:--" appears on screen.
"PGM" flashes in the front panel display.

PGM



2 **Press DISC SIDE A, then 1, 2 and 3.**

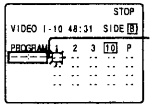
A → ① ...



Total playing time* (See the section below, "To Check the Total Playing Time".)

3 **Press DISC SIDE B, then +10, 0, PAUSE (II).**

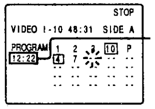
B → +10 → PAUSE



When you enter PAUSE (**II**), the display returns to "--:--" "P" indicates that a PAUSE (**II**) is entered.

4 **Press 4, DISC SIDE A, then, 7.**

④ → A → ⑦



The total playing time of the programmed chapters entered after the PAUSE (**II**).

5 **Press PLAY (►).**

PLAY

To Check the Total Playing Time ....

You can check the total playing time of the programmed chapters on the LD containing TOC (Table of Contents) data. To display the total playing time of the programmed chapters, press the (LD) QUICK START button while in stop mode to turn off the indicator, then press PLAY (►) to display the AV Calendar before you press the PGM button. When you program chapters on side B while checking the total playing time, press (DISC) SIDE B to display the AV Calendar on side B before pressing the PGM button.

To Start Over ....

CLEAR → PGM

Press CLEAR, then PGM. Enter the new chapter numbers.

To Change an Entry ....

SEARCH/NEXT or BACK

Press SEARCH/NEXT or BACK to advance or go back one entry. Enter the correct number.

---

* *If you enter chapter number 51 or greater, or if total playing time exceeds 100 minutes, the total playing time turns to "--:--".*

To Enter a Number Greater Than 10

+10 → X **Press +10 and one of the number keys,** following the same procedure as on page 18.

To Cancel Programmed Play

CLEAR

Press CLEAR.
The player resumes normal playback.

To Replay the Programmed Chapters

REPEAT

Press REPEAT.
"REPEAT" is displayed on the screen.

To Advance or Go Back One Chapter*

ACS/AMS

Press ACS/AMS (|◀◀/▶▶|).

To Check the Contents of the Program

DISPLAY

Press DISPLAY twice.
The flashing number indicates the chapter now playing.

How to Continue Play From the Point You Stopped at — Memory Play

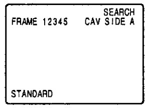
This function can only be used for LDs, and in continuous play mode. Even if you use the STOP (■) button to stop, you can still continue play from the point you stopped at. Locate the MEMORY PLAY button on the Remote Commander.

To Play Again from the Point You Stopped at

MEMORY PLAY

Press MEMORY PLAY on the Remote while in stop mode.

The player starts searching for the point you stopped at.



Play starts from the point you stopped at.

The point at which you stopped playing is stored in the player's memory until you press STOP (■) again. It is retained even if you turn off the power.** Press MEMORY PLAY. The player turns on and resumes playback from the point you stopped at.

---

* *The player does not go back to previous chapters if the SHUTTLE Ring is rotated to the left, although, it does advance to forward chapters if rotated to the right. To go back to preceding chapters press the ACS /AMS (|◀◀) button.*

** *If you press ⏏, the memory is cleared and this function is canceled.*

To Play a Compact Disc

This section explains how to perform procedures associated with playing CDs.

How to Load and Play a CD (Compact Disc)

After you have connected the Multi Disc Player to the stereo system, you can begin playing a compact disc. Locate the POWER, OPEN/CLOSE and PLAY buttons on the Remote Commander or the front panel of the player.

1 Turn on the multi disc player.

POWER (Player) POWER (Remote)

Press the POWER button on the player or Remote Commander (Remote).

2 Turn on the stereo system.

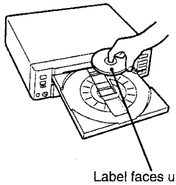
Turn on the amplifier or receiver and select CD, AUX or other desired audio input.

3 Open the disc tray.

OPEN/CLOSE (Player) OPEN/CLOSE (Remote)

Press the OPEN/CLOSE (⏏) button. The front cover of the player slides down and the disc tray comes out.

4 Place a disc on the tray.


Label faces up.

Carefully center a single CD on the tray. *
If you insert more than one disc, or the disc is not seated properly, it may not play or damage the unit.

What is this indication?

NO dISC

This indication appears in the front panel display when the tray is empty.

5 Start playback.

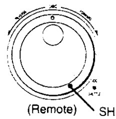
PLAY (Player) PLAY (Remote)

Press PLAY (▶).**

To Advance or Reverse

SCAN (Player)

Hold down the SCAN (◀◀/▶▶) button on the player or **rotate the Shuttle Ring** on the Remote.



To Advance or Go Back One Track at a Time

ACS/AMS (Player or Remote)

Press the ACS/AMS (|◀◀/▶▶|) button.

To Interrupt Play

PAUSE (Player or Remote)

Press the PAUSE (❚❚) button.
To resume playback, press PAUSE (❚❚) or PLAY (▶).

---

* *Do not use a CD stabilizer as it may cause damage to your disc or player.*

** *You can start playing by pressing (DISC) SIDE A instead of PLAY (▶). If you press (DISC) SIDE B, the player stops.*

To Stop Playback ....

STOP
(Player or Remote)

Press the STOP (■) button.
To play again from the beginning, press PLAY (▶).

To Stop Play and Remove the Disc ....

OPEN/CLOSE (Player) OPEN/CLOSE (Remote)

Press the OPEN/CLOSE (≜) button.
Remove the CD and press ≜ again to close the empty tray.

To Have the Player Pause Before Starting ....

PAUSE
(Player or Remote)

Press the PAUSE (❚❚) button after doing step 4 on page 27.
The tray closes and the player waits at the start of the disc until you press PLAY (▶) or PAUSE (❚❚).

To Play a Stereo CD or a Second Audio Program (SAP) CD ....

PLAY (Player or Remote) → AUDIO MONITOR (Remote)

Press the PLAY (▶) button, then press the AUDIO MONITOR button on the Remote.

The procedure below indicates how the output and the display change with each press.
The active tracks appears for three seconds on the TV screen. It always appears in the front panel display.

Procedure	Screen message	Output Sound	
		Stereo Disc	SAP Disc
1 **Press PLAY (▶).**	No message	Stereo (Both channels)	Soundtrack 1 (left channel) Soundtrack 2 (right channel)
2 **Press AUDIO MONITOR.**	1/L	Left channel	Soundtrack 1 (left channel)
3 **Press AUDIO MONITOR again.**	2/R	Right channel	Soundtrack 2 (right channel)
4 **Press AUDIO MONITOR again to return to stereo status.**	1/L 2/R	Stereo (Both channels)	Soundtrack 1 (left channel) Soundtrack 2 (right channel)

Understanding Displays and Messages When Playing CDs

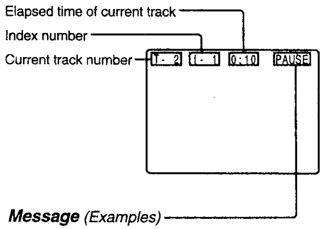
You can determine the player operating status or disc information in one of two ways: (1) by displaying the information on the TV screen, or (2) by looking at the front panel display. Locate the DISPLAY button on the Remote Commander.

To View On-Screen Information .....

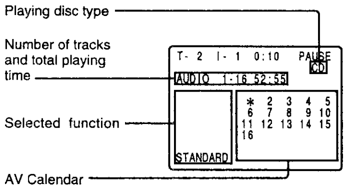
DISPLAY

Turn on the television, and press DISPLAY on the Remote.
Each time you press DISPLAY, messages appear on the TV screen as shown below.
The table is a key to the messages that appear on the right of the screen.

Press DISPLAY once.


Elapsed time of current track
Index number
Current track number
T- 2
I- 1
0:10
PAUSE

Press DISPLAY twice.


Playing disc type
Number of tracks and total playing time
Selected function
AV Calendar
T- 2 I- 1 0:10 PAUSE
CD
AUDIO 1-16 52:55
STANDARD
* 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16

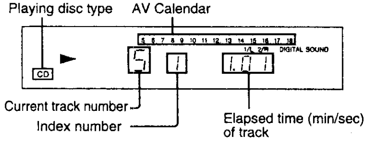
To turn off the display, press DISPLAY again.

Message (Examples)

Screen Display	Current Status of the Player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing CD
STOP	Operation stopped
PAUSE	Operation momentarily stopped
⏩ / ⏪	Variable Speed (SHUTTLE Ring) Scanning
SEARCH	Searching

Reading the Front Panel Display

The illustration to the right is an example of what is displayed on the front panel of the player.


Playing disc type
AV Calendar
CD
5 6 7 8 9 10 11 12 13 14 15 16 17 18
1/L 2/R DIGITAL SOUND
5
1
1.01
Current track number
Index number
Elapsed time (min/sec) of track

Finding Out Play Status

When playing a CD, the AV Calendar shows information on the total number of tracks on the disc or those programmed to play. As tracks are played, the corresponding numbers in the calendar disappear. If the CD contains more than 20 tracks, ">" appears to the right of the calendar.

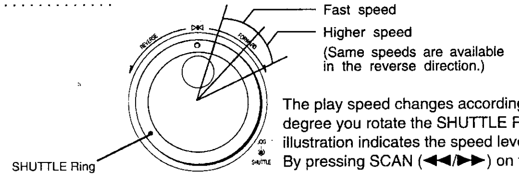
To Turn Off the Front Panel Display ....

Press FL DISPLAY on the player. Each time you press FL DISPLAY, the display turns on/off.

How to Locate a Certain Track

CDs are divided into sections called "tracks". To scan a disc and find a certain point, use the SHUTTLE Ring. To find and play from the beginning of a certain track, use the number keys. In addition, use the ACS/AMS (⏮/⏭) buttons to advance or reverse one track at a time. Locate the SHUTTLE Ring and number keys on the Remote Commander, the ACS/AMS (⏮/⏭) buttons on the Remote Commander or player.

To Find a Certain Point on the Disc



Rotate the SHUTTLE Ring in the forward or reverse direction.

The play speed changes according to the degree you rotate the SHUTTLE Ring. The illustration indicates the speed levels. By pressing SCAN (◀◀/▶▶) on the player, you can scan the disc at a constant speed.

To Locate a Particular Track (Track Search)

8

Press one of the number keys on the Remote to enter the track number you want played.

To Enter a Number Greater Than 10

Do this to make a numerical sum. For example, to enter 18, press +10 and 8; to enter 20, press +10, +10 and 0.

+10 → X **Press +10 and one of the number keys.**

+10 → 8 ...."18"

+10 → +10 → 0 ...."20"

If you make a mistake while entering press CLEAR, then enter the correct number.

To Check the Current Track Number

See the front panel display (page 29).

To Advance or Go Back One Track at a Time (Skip Search)

ACS/AMS ⏮ ⏭

Press ACS/AMS (⏮) once to return to the beginning of the current track. Press it again before the selection starts to return to the beginning of the previous track.

Press ACS/AMS (⏭) to advance to the beginning of the next track.

Hold down ACS/AMS (⏮ or ⏭) for continuous skip search.

To Play a Single Track Once

1 **Press 1/SIDE/ALL on the Remote.**

1/SIDE /ALL

"1" is displayed on the front panel display.

2 **Enter the track number you want played.**

8

When the track has been played, the player stops. To cancel the setting, press 1/SIDE/ALL again or CLEAR.

If you press the wrong number keys, simply press the correct ones.

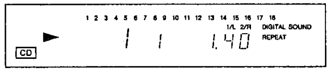
How to Replay the Same CD Selections

You can program the player to play the same selections over and over until you signal the repetition to stop. You can replay the entire disc, a single track, or a section between one pair of points on the disc.
Locate the REPEAT, 1/SIDE/ALL, and the REPEAT A↔B buttons on the Remote Commander.

To Repeat the Entire Disc

REPEAT

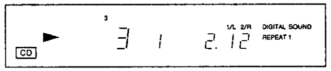
Press REPEAT on the Remote.
"REPEAT" lights up in the front panel display. The player plays all tracks on the CD. When the player reaches the end of the disc, it plays again.



To Repeat the Current Track (Single Repeat)

1/SIDE /ALL → REPEAT

Press 1/SIDE/ALL, then REPEAT on the Remote.
"REPEAT" and "1" light up in the front panel display. The current track repeats continuously.



To Cancel Repeat Play

REPEAT

Press REPEAT.
"REPEAT" disappears.*

To Cancel Single Repeat

1/SIDE /ALL → REPEAT

Press 1/SIDE/ALL and REPEAT.*

To Repeat One Section of the Disc (Repeat A↔B)

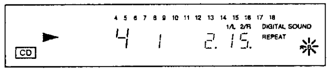
1 Go back to the start of the section you want to replay.

2 **Press REPEAT A↔B** on the Remote to mark the beginning of the section.

REPEAT A↔B

The "REPEAT" and "A–" ights up, and "B" indication begins flashing in the front panel display.

3 Let the player run to the end of the section you want to repeat.



4 **Press REPEAT A↔B again** to mark the end of the section.

REPEAT A↔B

"REPEAT" and "A-B" light up in the front panel display.
The player repeatedly plays the selection between the two selected points.

To Cancel Repeat A↔B

CLEAR

Press CLEAR.

---

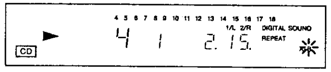
* *You can also cancel Repeat and Single Repeat by pressing CLEAR.*

To Replay From a Specific Point on the Disc (Memory Search)

1 Go to the point from where you want to start playback.

2 **Press REPEAT A↔B** to mark the starting point. (REPEAT A↔B)

The "REPEAT" and "A–" ights up, and "B" indication begins flashing in the front panel display.



3 **Press CLEAR** to turn off the indication "A–B REPEAT". (Thus not setting an end point.) (CLEAR)

4 **Press SEARCH/NEXT** on the Remote at any point you like on the disc. (SEARCH/NEXT)

The player goes to the point you marked and starts playing.*

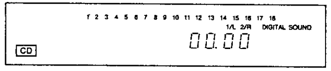
How to Search by Elapsed Playing Time—Time Search

You can locate a particular point on a CD by specifying the elapsed playing time from the beginning of the disc. Locate the FRAME/TIME, SEARCH/NEXT and number keys on the Remote Commander.

To Enter the Elapsed Playing Time

1 **Press FRAME/TIME on the Remote.** (FRAME/TIME)

"00.00" appears in the front panel display.



2 **Enter the desired multi-digit number corresponding** to the time you want found.**

Sample Entry for CDs
To locate the 12-minute, 5-second point, press the number keys in the order on the right:

Enter four digits.

① → ② → ⓪ → ⑤

If you press the wrong key, press BACK to clear the number, then enter the correct number.

3 **Press SEARCH/NEXT on the Remote.** (SEARCH/NEXT)

Play starts from the time specified in step 2.

To Cancel Time Search

(CLEAR) Before pressing SEARCH/NEXT, **press CLEAR.**

In addition to normal play mode, you can conduct Time Search while in Repeat or Pause mode. When the specified time appears after the search, play continues in the same mode.

---

* *The point marked "A" from where you can resume playback is cleared if you open the disc tray, turn off the player, carry out a Frame/Time Search or Chapter Search.*

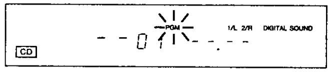
** *If you enter a time number not contained on the disc, play stops.*

How to Play Only Certain Tracks—Programmed Play

You can program, in any order you like, the tracks the Multi Disc Player plays. This play list is stored in the player until you either remove the disc or turn off the power. You can program up to 25 tracks. After playing all the selections, the player stops and waits for your next command. Locate the number keys, PGM, and PLAY buttons on the Remote Commander.

1 **Press PGM on the Remote.** (PGM)

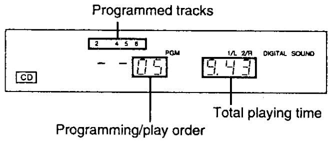
"PGM" flashes in the front panel display.



2 **Press one of the number keys.** ⑤ . . .

The total playing time of the programmed tracks is displayed on the front panel display.

Press numbers for all the tracks you want played. For example, press 5, 4, 6 and 2 to play those tracks.



3 **Press PLAY (►).** (PLAY)

To Start Over	CLEAR → PGM	**Press CLEAR and PGM.** Then, enter the correct track numbers.
To Change an Entry	SEARCH/NEXT or BACK	**Press SEARCH/NEXT or BACK** to advance or go back one entry. Enter the new number.
To Enter a Number Greater Than 10	+10 → X	**Press +10 and one of the number keys** following the same procedure as on page 30.
To Program a Pause	PAUSE	**Press PAUSE** at the point you want the program to stop playing. A pause is counted as a selection.
To Cancel Programmed Play	CLEAR	**Press CLEAR.** The player resumes normal playback.
To Replay the Same Programmed Tracks	REPEAT	**Press REPEAT.** "REPEAT" is displayed in the front panel dispaly.
To Advance or Go Back One Track*	ACS/AMS ⏮ ⏭	**Press ACS/AMS (⏮/⏭).** The player moves to the preceding or following programmed tracks.
To Check the Contents of the Program (TV screen)	DISPLAY	**Press DISPLAY twice.** The programmed track numbers are displayed on the TV screen. The flashing number indicates the current track. Once a track has been played, that track number in the front panel display (AV Calendar) disappears.

---

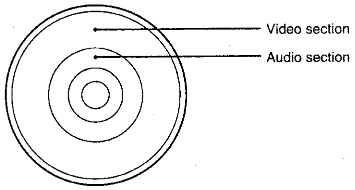
* *The player does not go back to previous tracks if the SHUTTLE Ring is rotated to the left, however, it does advance to forward tracks if rotated to the right. To go back to preceding tracks, press the ACS/AMS (⏮) button repeatedly.*

To Play a Compact Disc Video

This section explains basic procedures for playing CDVs and VSDs. Since CDV and VSD play holds so many functions in common with CD and LD play, see other sections of this manual for details of applicable functions mentioned here.

How to Load and Play a CDV (Compact Disc Video) or VSD (Video Single Disc)

CDVs are divided into two sections: video and audio. The video section of the disc consists of 5 minutes of video play with digital audio output. The audio section consists of 20 minutes of solely digital audio output (playable on any CD player). Thus, the CDV has the function of both an LD and CD combined in one disc. The audio and the video sections of the CDV are assigned track numbers. The track on the video section corresponds to the chapter on the LD and the same on the CD. You can regard VSDs as CDVs that have no audio tracks.


Video section
Audio section

1 **Turn on the TV, stereo system (if connected), and Multi Disc Player.**

2 **Place the disc on the tray.**

3 **Press PLAY (▶).**
Play begins from the video section.
To start play from the audio section, using the number keys, enter the track number that starts the audio section.

To Stop and Remove the Disc .... OPEN/CLOSE ⏏ OPEN/CLOSE ⏏

To Advance or Go Back One Track at a Time .... ACS/AMS ⏮ ⏭

To Interrupt Play .... ⏸ PAUSE ⏸

To Find a Certain Audio or Video Track .... Ⓧ (Remote)

To Play Certain Video Tracks .... ▷ PLAY ▶

To Repeat the Current Track .... 1/SIDE /ALL → REPEAT (Remote)

To Repeat All Selections .... REPEAT (Remote)

To Repeat a Section of the Disc .... REPEAT A↔B (Remote)

To Use Variable Speed Scan .... (Audio and Video) SHUTTLE Ring or SCAN ◀◀ ▶▶

Understanding Displays and Messages When Playing CDVs or VSDs

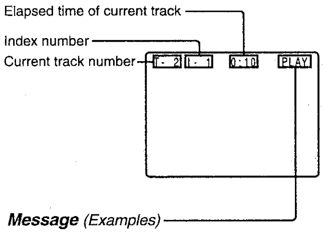
You can determine the player operating status or CDV information in one of two ways: (1) by displaying the information on the TV screen, or (2) by looking at the front panel display. Locate the DISPLAY and AV TIME buttons on the Remote Commander.

To View On-Screen Information ....

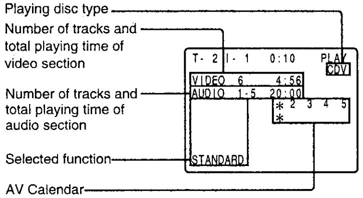
DISPLAY

Press DISPLAY on the Remote.
Each time you press DISPLAY, messages appear on the TV screen as shown below.
The table is a key to the messages that appear on the right of the screen.

Press DISPLAY once.


Elapsed time of current track
Index number
Current track number
T- 2
I- 1
0:10
PLAY

Press DISPLAY twice.


Playing disc type
Number of tracks and total playing time of video section
Number of tracks and total playing time of audio section
Selected function
AV Calendar
T- 2
I- 1
0:10
PLAY
CDV
VIDEO 6 4:56
AUDIO 1-5 20:00
* 2 3 4 5
*
STANDARD

Message *(Examples)*

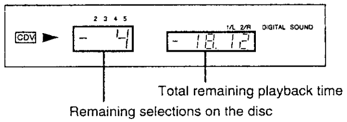
Screen Display	Current Status of the Player
OPEN	Disc tray open
CLOSE	Disc tray closed
PLAY	Playing CDV
STOP	Operation stopped
PAUSE	Operation momentarily stopped
⏩ / ⏪	Variable Speed (SHUTTLE Ring) Scanning
SEARCH	Searching

To turn off the display, press DISPLAY again.

To Display Remaining Playback Time ....

AV TIME

Press AV TIME on the Remote. See "How to Display the Elapsed Playing Time – Time Counter" on page 37.
Example. Press AV TIME three times.


CDV
2 3 4 5
- 4
- 18. 12
DIGITAL SOUND
Total remaining playback time
Remaining selections on the disc

Finding Out Play Status

When playing a CDV, the AV Calendar on the front panel display shows information on the total number of selections. As selections are played, the corresponding numbers in the calendar disappear.

To Turn Off the Front Panel Display ....

Press FL DISPLAY on the player. Each time you press FL DISPLAY, the display turns on/off.

To Play Any Disc (Advanced Functions for LD, CD, or CDV Play)

This section explains advanced functions which apply to any one of the three types of discs.

How to Have the Disc Play Within a Set Period of Time

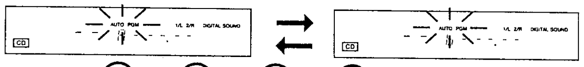
You can program the disc to play within a specified period of time. This is called "Auto Program Playback." Decide how long you want the disc to play and then enter half that amount of time. The player divides the selections on the disc into what it calls "Program A" and "Program B," playing both A and B for the amount of time entered. The player pauses between the two programs. The following procedure explains how to conduct Auto Program Playback on a CD, but you can also use the function for LDs with TOC and CDVs. (Auto Program does not function on LDs that do not contain TOC data.) Locate the AUTO PGM button and number keys on the Remote Commander.

To Ensure Correct Operation

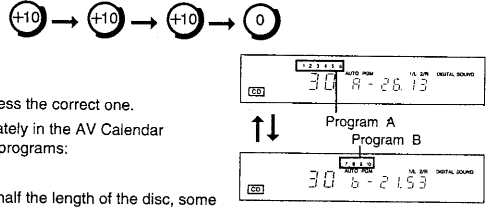
When you play an LD with TOC, press the (LD) QUICK START button on the player while in stop mode to turn off the indicator, then press PAUSE (**II**) to display the AV calendar before you press the AUTO PGM button. When you operate Auto Program on side B of the LD in the player, press PAUSE (**II**), then (DISC) SIDE B to display the AV Calendar on side B before you press the AUTO PGM button.*

To Play Selections Using Auto Program

1 **Press AUTO PGM on the Remote.** AUTO PGM "AUTO PGM" flashes in the front panel display.



2 **Enter the desired play time.**
Using the number keys, enter the time.
For example, to enter 30 minutes,
press +10 three times and 0.**


+10
+10
+10
0
Program A
Program B

If you press the wrong number, simply press the correct one.

Program A and Program B appear alternately in the AV Calendar displays the contents of the two different programs:

Program A and B, separated by a pause.

If you designate a play time shorter than half the length of the disc, some selections on the disc may not fit into the time span given and therefore may not play. On the other hand, if you designate a play time longer than the length of the disc, the whole program of selections may run on Program A, with none running on Program B. This is because Program A always has priority over B.

Example for a Forty-Minute Disc

Let's say your disc is 40 minutes long (see table below) and you designate playing time to run 15 minutes. Program A will run for 15 minutes (or less) and Program B will also run for 15 minutes (or less) for a total of about 30 minutes of play (see table below).

You enter	*Program A plays*	*Program B plays*	*Total play time*
15	15 min (or less)	15 min (or less)	30 min (or less)
30	30 min (or less)	10 min (about)	40 min
45	40 min (all selections)	0 min	40 min

3 **Press PLAY (▶).** PLAY

4 **Press PLAY (▶) again** to play Program B. PLAY

Program A selections start playing. The player pauses at the end of Program A and waits for you to press PLAY (▶) again for Program B.

To Resume Normal Play from Auto Program ....

CLEAR or 1/SIDE /ALL **Press CLEAR or 1/SIDE/ALL.**

---

* *You cannot make programs consisting of selections from both sides of an LD using Auto Program.*

** *If your LD contains 51 or more chapters on the playing side, Auto Program may not operate correctly.*

How to Display the Elapsed Playing Time — Time Counter

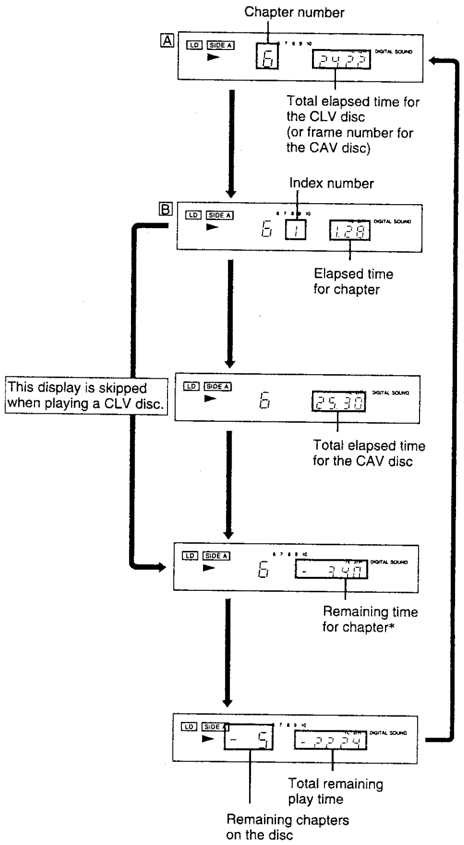
You can display elapsed time information on the front panel display or TV screen. How the information is displayed depends on the type of disc being played. When playing an LD, press (LD) QUICK START while in stop mode to turn off the indicator on the button. When the indicator is lit, remaining time is not displayed. Locate the AV TIME button on the Remote Commander.

To View the Elapsed or Remaining Time ....

AV TIME

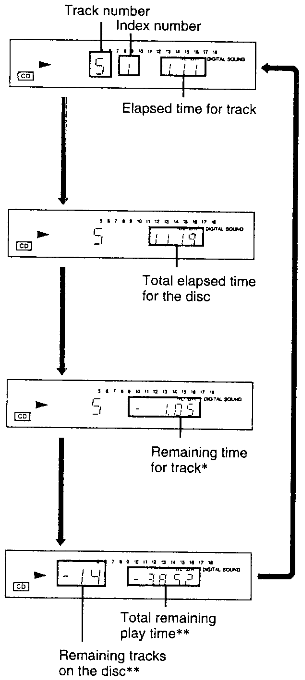
Each time you press AV TIME on the remote, the front panel display changes as follows.

LDs with TOC


Chapter number
A
Total elapsed time for the CLV disc (or frame number for the CAV disc)
Index number
B
Elapsed time for chapter
This display is skipped when playing a CLV disc.
Total elapsed time for the CAV disc
Remaining time for chapter*
Total remaining play time
Remaining chapters on the disc

When the (LD) QUICK START indicator is lit you can only change the display between A and B.

CDs/CDVs


Track number
Index number
Elapsed time for track
Total elapsed time for the disc
Remaining time for track*
Total remaining play time**
Remaining tracks on the disc**

---

* *The display does not show remaining play time for chapters or tracks numbered 51 or greater.*

** *When playing CDVs, these figures refer only to the current section (audio or video) being played.*

How to Program the Player to Pause or Scan Automatically

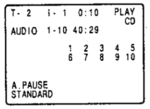
There are many functions you can program the Multi Disc Player to do automatically. Two of them are Auto Pause and Intro Scan. To make the player stop every time a selection ends, use Auto Pause. When you want to find a particular track, use the INTRO button to make the player play the first 8 seconds (approximately) of each chapter or track on the CD, LD, or CDV. Locate the AUTO PAUSE and INTRO buttons on the Remote Commander.

To Make the Player Stop Momentarily (Auto Pause) ....

AUTO PAUSE

Press AUTO PAUSE on the Remote.
When the current selection ends, the player pauses.
To play the next selection, press PLAY (►).*

To display "A. PAUSE" on the TV screen, press DISPLAY twice. If you have pressed DISPLAY once, "A. PAUSE" appears for three seconds, then disappears.



To Resume Normal Playback ....

AUTO PAUSE

Press AUTO PAUSE again.

To Scan the Beginning of Each Chapter/Track (Intro Scan) ....

INTRO

Press INTRO on the Remote.
The player plays only the first 8 seconds (introduction) of each chapter or track on the disc.** When playing an LD, the player pauses after introducing the last chapter on side B of the disc. On CDVs, intro-scanning starts from the video section of the disc.

To Resume Normal Play ....

CLEAR

Press CLEAR.
Play resumes from the selection just introduced.

To Stop Play ....

STOP

Press STOP (■).

---

* *In Single Repeat mode, the same selection starts playing again. In Repeat A-B mode, playback starts from the point marked "A".*

** *In stop mode, intro-scanning starts from the first chapter or track on the disc. If you press INTRO while playing a chapter or track, scanning starts from the next one. If you press INTRO while the player is introducing a chapter or track, the scanning skips to the next one.*

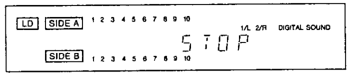
How to Play Selections in Random Order—Shuffle Play

Shuffle Play is another of the Multi Disc Player's programmable functions. As the name implies, this function allows you to play all the tracks or chapters on a disc in random order once or repeatedly. From this random order you may program the player to delete tracks or chapters you don't want played. (Note that Shuffle Play can only be conducted on LDs containing TOC data, CDs and CDVs.) Locate the number keys, SHUFFLE, and PLAY buttons on the Remote Commander.

Before Shuffle Play on an LD With TOC

You can shuffle play on an LD only when the AV Calendar on the playing side is displayed. Make sure that the AV Calendar(s) on the playing side(s) are displayed before shuffle playing.

1. **Press the (LD) QUICK START button** on the player while in stop mode.
   LD QUICK START
   The (LD) QUICK START indicator goes off.
2. **Press (DISC) SIDE A** to display the AV Calendar on side A.
   A
3. **Press (DISC) SIDE B** to display the AV Calendar on side B.
   B
   The AV Calendars on side A and B appear.
4. **Press STOP (■).**
   STOP



To Shuffle Play All Chapters on Both Sides of an LD (Both Sides Shuffle)

1. Make sure that the AV Calendars on both sides of the LD are displayed.
2. **Press SHUFFLE** on the Remote.
   SHUFFLE
3. **Press 1/SIDE/ALL** on the Remote to turn off "ONE SIDE".
   1/SIDE /ALL
4. **Press PLAY (►).**
   PLAY
   All the chapters on side A, then side B are played once in random order. After all the chapters on side B are played, the player stops.

To Shuffle Play All Chapters on One Side of an LD (One Side Shuffle)

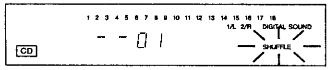
1. Make sure that the AV Calendar on the disc side you want to play is displayed.
2. **Press (DISC) SIDE A or B** to select the playing side.
   A or B
3. **Press SHUFFLE** on the Remote.
   SHUFFLE
4. **Press PLAY (►).**
   PLAY
   All the chapters on the side selected in step 2 are played once in random order. After the chapters are played, the player stops.

To Shuffle Play All Tracks on a CD or CDV

When you play a CD or CDV, make sure the disc tray has closed completely, and the "STOP" indication in the front panel display has stopped flashing, then press the SHUFFLE button.

1 **Press SHUFFLE.**

"SHUFFLE" flashes in the front panel display.



2 **Press PLAY (▶).**

All the selections on the disc play once in random order. After all the selections play, the player stops. CDV selections play randomly from both the audio and video parts of the disc.

To Advance to the Next Selection ....

Press ACS/AMS (▶▶|) to skip to the next track or chapter. (The ACS/AMS (|◀◀) button does not function to return to a previous track or chapter in Shuffle Play mode.) Or, use the SHUTTLE Ring.

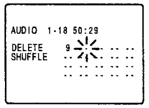
To Resume Normal Play ....

Press CLEAR or 1/SIDE/ALL.
This clears Shuffle Play. Playback resumes from the next selection.

To Delete Certain Selections From Shuffle Play (Delete Shuffle)

1 **Press SHUFFLE.**

2 **Enter the chapter or track number** of the selection you do not want the player to play.*



(TV Screen)

3 **Press PLAY (▶).**

The player automatically plays a random program of selections without the ones you deleted.

To Clear an Entry

1 **Press CLEAR.**

2 **Press SHUFFLE.**

3 **Enter the correct numbers.**

To clear the entry during play, press CLEAR and SHUFFLE again before entering the correct numbers.

To Change an Entered Number

1 **Press SEARCH/NEXT** (to advance) or **BACK** (to go back) until the number you want to change flashes on the front panel display.

2 **Using the number keys,** enter the correct number.

* *When shuffle playing on an LD, you can delete chapters from each side of the LD. Press one of the DISC SIDE A/B buttons corresponding to the disc side on which you want to delete chapters, then enter the chapter number. The chapter numbers on side B are displayed in squares.*

To Repeat Shuffle Play ....

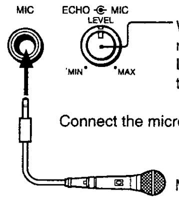
Press REPEAT on the Remote.
This activates the REPEAT indication in the front panel display. The player reshuffles the selections and plays them back in a different random order.

To Clear Shuffle Play ....

Press CLEAR or 1/SIDE/ALL.
When you turn off the player, or you remove the disc, all shuffle functions clear from the memory of the player.

To Play Karaoke

1 Connect the microphone.

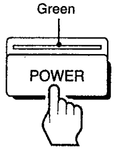


When connecting the microphone, turn the MIC LEVEL control (the inner knob) to MIN.

Connect the microphone plug to the MIC jack.

Microphone (not supplied)

2 Turn on the player.

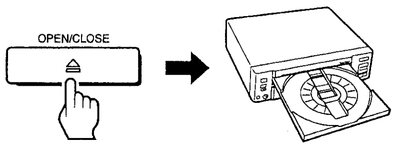


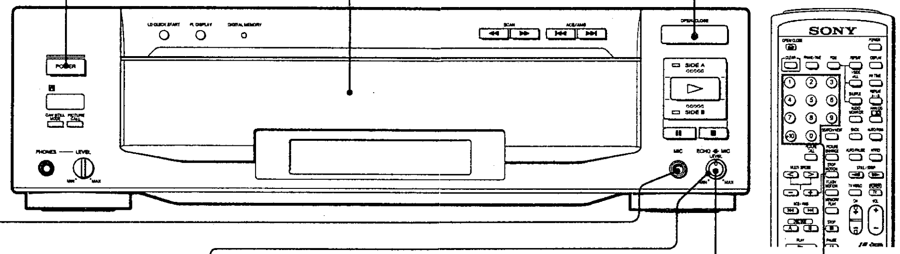
3 Turn on the TV and stereo system.

TV:
Set to "Video".

Stereo system:
Turn on the amplifier or receiver and select CD or AUX for audio output.

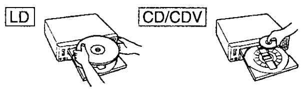
4 Open the disc tray.





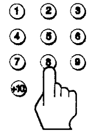
5 Place a disc on the tray.

Carefully center a single disc on the tray. The disc will not play if it is not seated properly.



Always insert one disc at a time. Inserting more than one may damage the player.

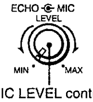
6 Choose a selection to play.



The disc tray closes automatically and the selection starts playing. If you enter the wrong number, simply reenter the correct one.

- Press PLAY (▶) or push the disc tray to playback from the beginning of the disc (side A of the LD).
- To choose a selection on side B of the LD, press DISC SIDE B, then press the number key(s).

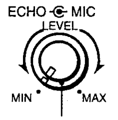
7 Adjust the microphone volume.



MIC LEVEL control

Adjust the microphone volume with the MIC LEVEL control (the inner knob).
Sound from a microphone cannot be output when the player is connected to the amplifier with a Fiber Optical Cable. To output sound from a microphone, use an Audio Cable (Red & White plugs) for connection.

8 Adjust the microphone echo.



ECHO LEVEL control

Adjust the strength of the echo with the ECHO LEVEL control (the outer knob).

Extra Functions for Karaoke Entertainment

Using the AUDIO MONITOR and ANALOG buttons (page 15)
Karaoke discs can be recorded using one of three formats: multi audio (MULTI AUDIO), multiplex and stereo. Multi audio and multiplex discs include vocals. Stereo discs do not. If the disc loaded in the player is a multi audio or multiplex disc, you can play Karaoke listening to the voice recorded on the disc by alternating the sound using the AUDIO MONITOR or ANALOG button on the Remote Commander.

Auto Pause (page 38)
You can make the player pause every time a selection ends. To play the next selection, press PLAY (▶) or PAUSE (❚❚), or choose the selection directly with the number key(s).

Programmed Play (page 25)
You can choose the selections in any order you like and play them continuously for non-stop Karaoke entertainment.

If howling occurs
Correct by doing the following:
– Move the microphone away from the speakers
– Lower the MIC or ECHO LEVEL
– Lower the volume of the speakers

When listening through headphones
Once the headphones are connected, the volume must be adjusted with the LEVEL control beside the PHONES jack.

Note about disc sides
The player determines that the upper side of the disc is side "A," and the other side is "B," regardless of label "A" or "B" printed on the disc.

If the output is distorted
The output may sound distorted when listening through your TV speakers. Correct this by setting the ATT (Attenuator) switch on the rear panel of the player to ON. (This will lower the volume which should now be adjusted with the volume control on the TV.

If the picture on the TV flickers
The picture appearing on the TV screen may flicker when listening through your TV speakers and the MIC volume is set too high. Correct this by setting the ATT (Attenuator) switch on the rear panel to ON, or lower the MIC LEVEL.

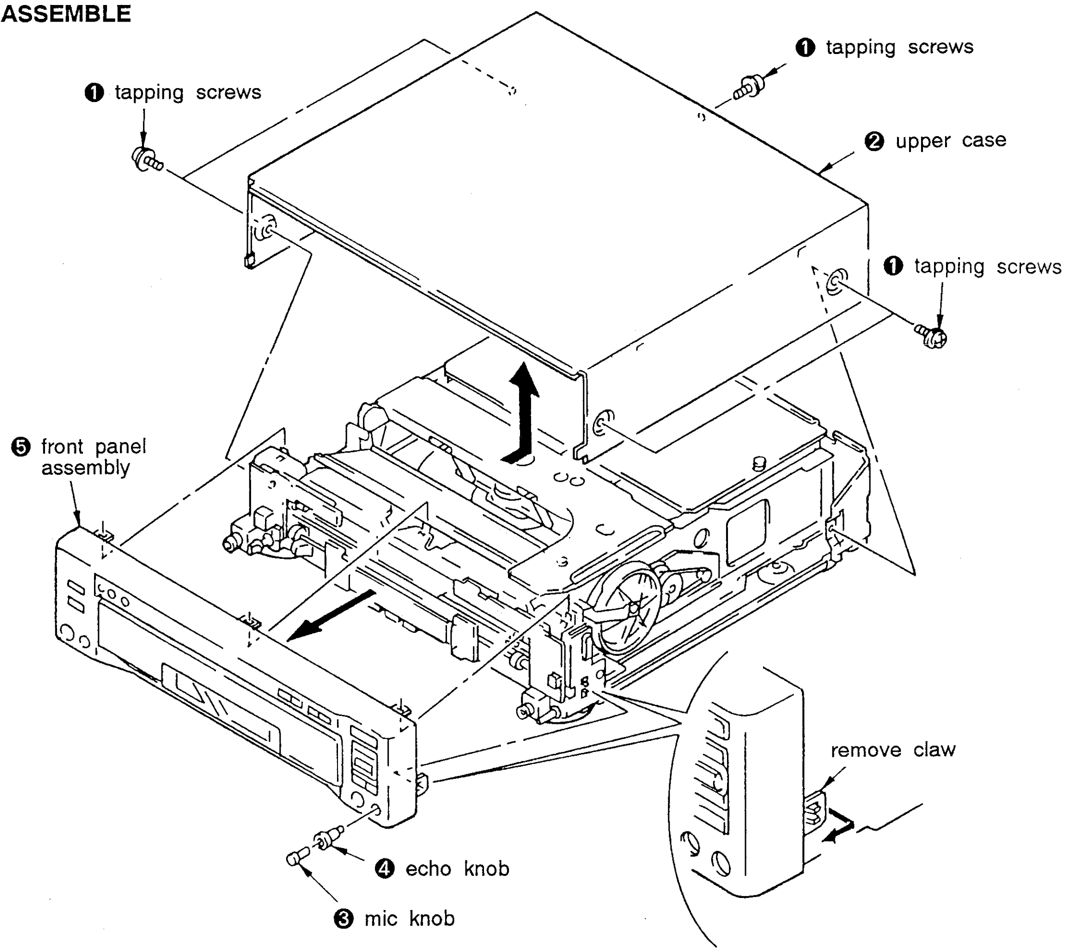
SECTION 2

DISASSEMBLY

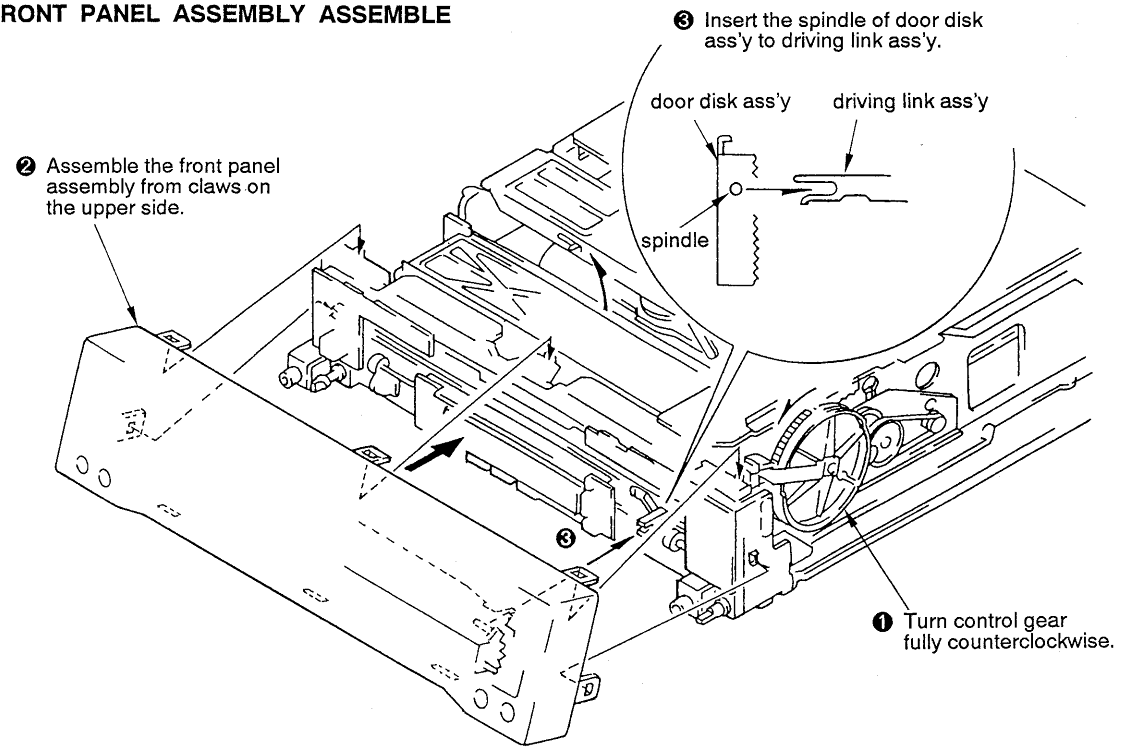
Note: Follow the disassembly procedure in the numerical order given.

2-1. UPPER CASE, FRONT PANEL ASSEMBLY

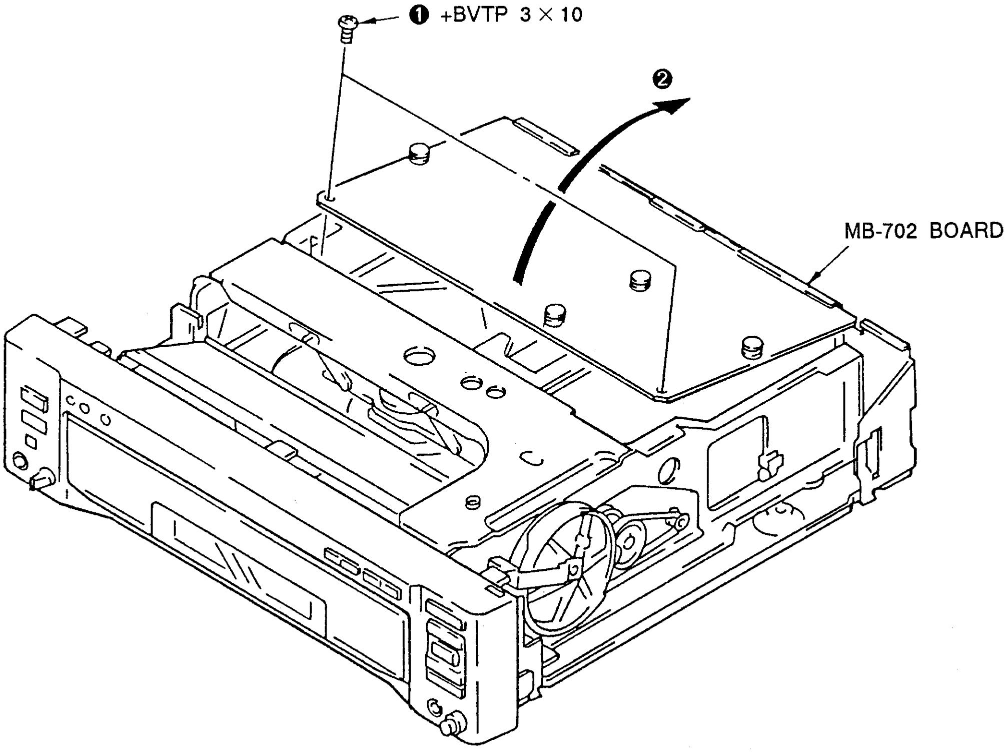
• DISASSEMBLE


❶ tapping screws
❶ tapping screws
❷ upper case
❶ tapping screws
❺ front panel assembly
remove claw
❹ echo knob
❸ mic knob

• FRONT PANEL ASSEMBLY ASSEMBLE

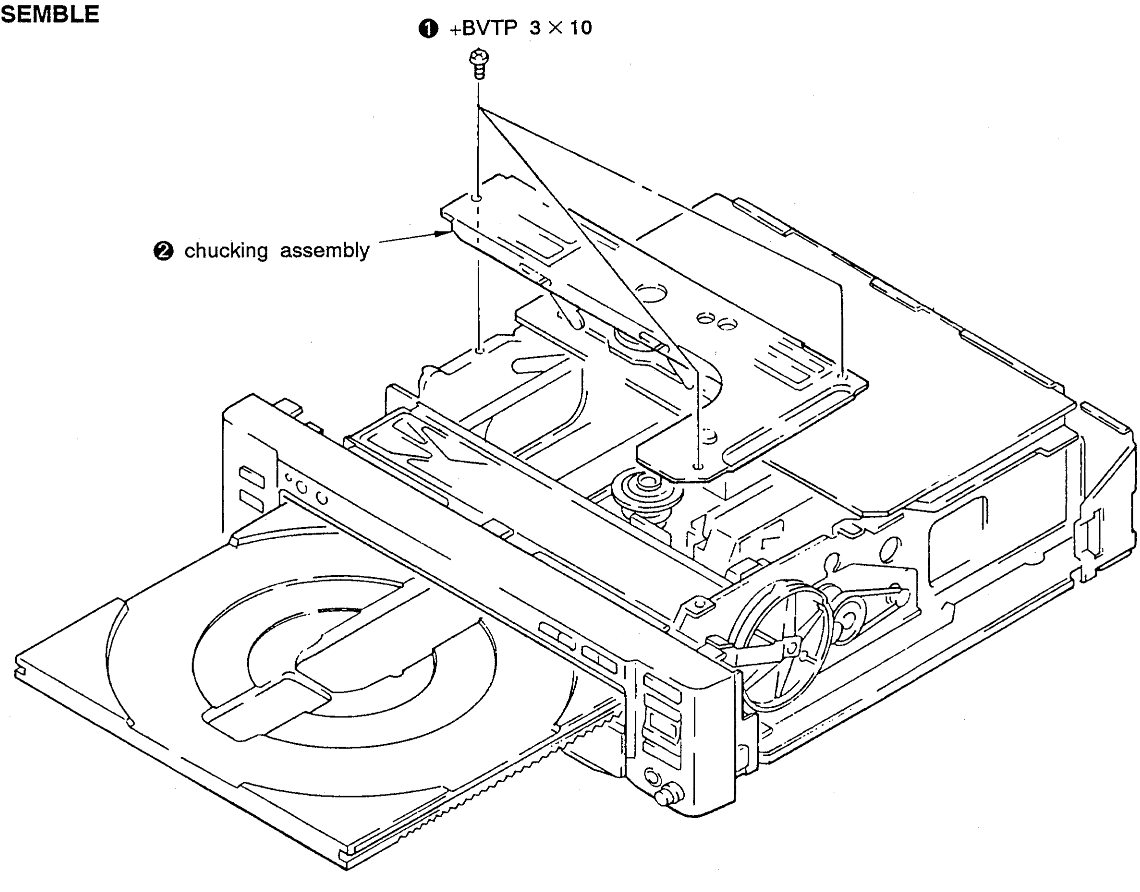

❸ Insert the spindle of door disk ass'y to driving link ass'y.
door disk ass'y
driving link ass'y
spindle
❷ Assemble the front panel assembly from claws on the upper side.
❸
❶ Turn control gear fully counterclockwise.

2-2. MB-702 BOARD

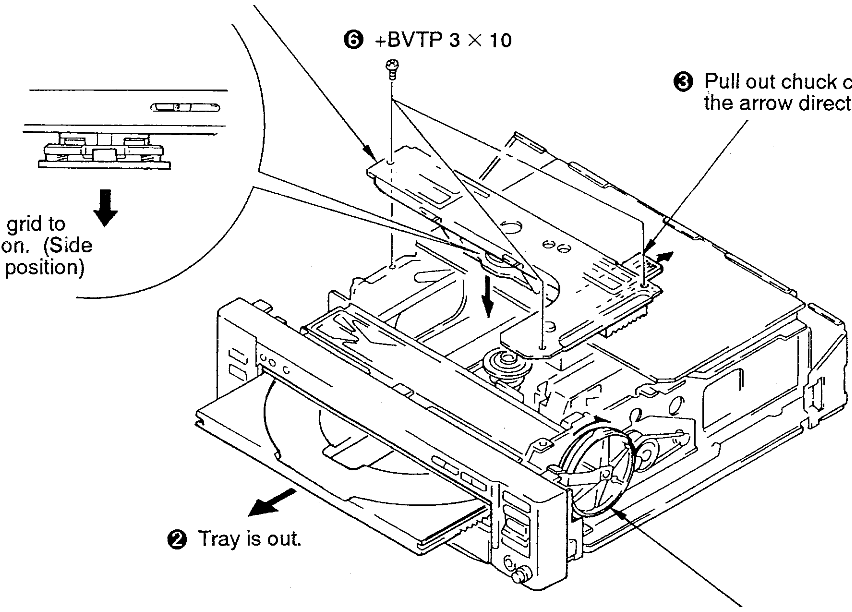

❶ +BVTP 3 × 10
❷
MB-702 BOARD

2-3. CHUCKING ASSEMBLY

• DISASSEMBLE


❶ +BVTP 3 × 10
❷ chucking assembly

- **ASSEMBLE**



❺ Fit chucking assembly.

❻ +BVTP 3 × 10

❸ Pull out chuck cam in the arrow direction.

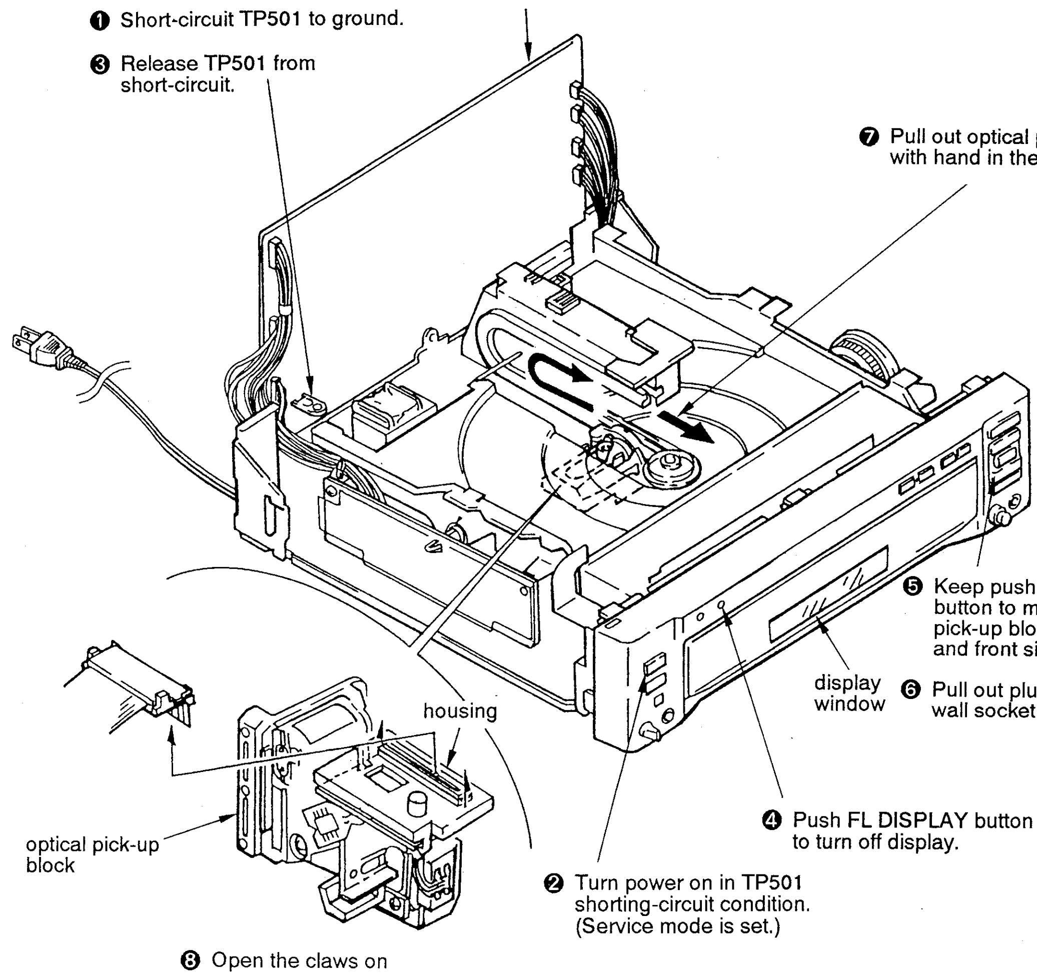
❹ Put second grid to lower position. (Side A chucking position)

❷ Tray is out.

❶ Turn control gear clockwise.

2-4. OPTICAL PICK-UP BLOCK

- **DISASSEMBLE I (OPTICAL PICK-UP BLOCK MOTOR OPERATES)**



❶ Short-circuit TP501 to ground.

❸ Release TP501 from short-circuit.

❼ Pull out optical pick-up block with hand in the arrow direction.

❺ Keep pushing SIDE B button to move optical pick-up block to upper and front side.

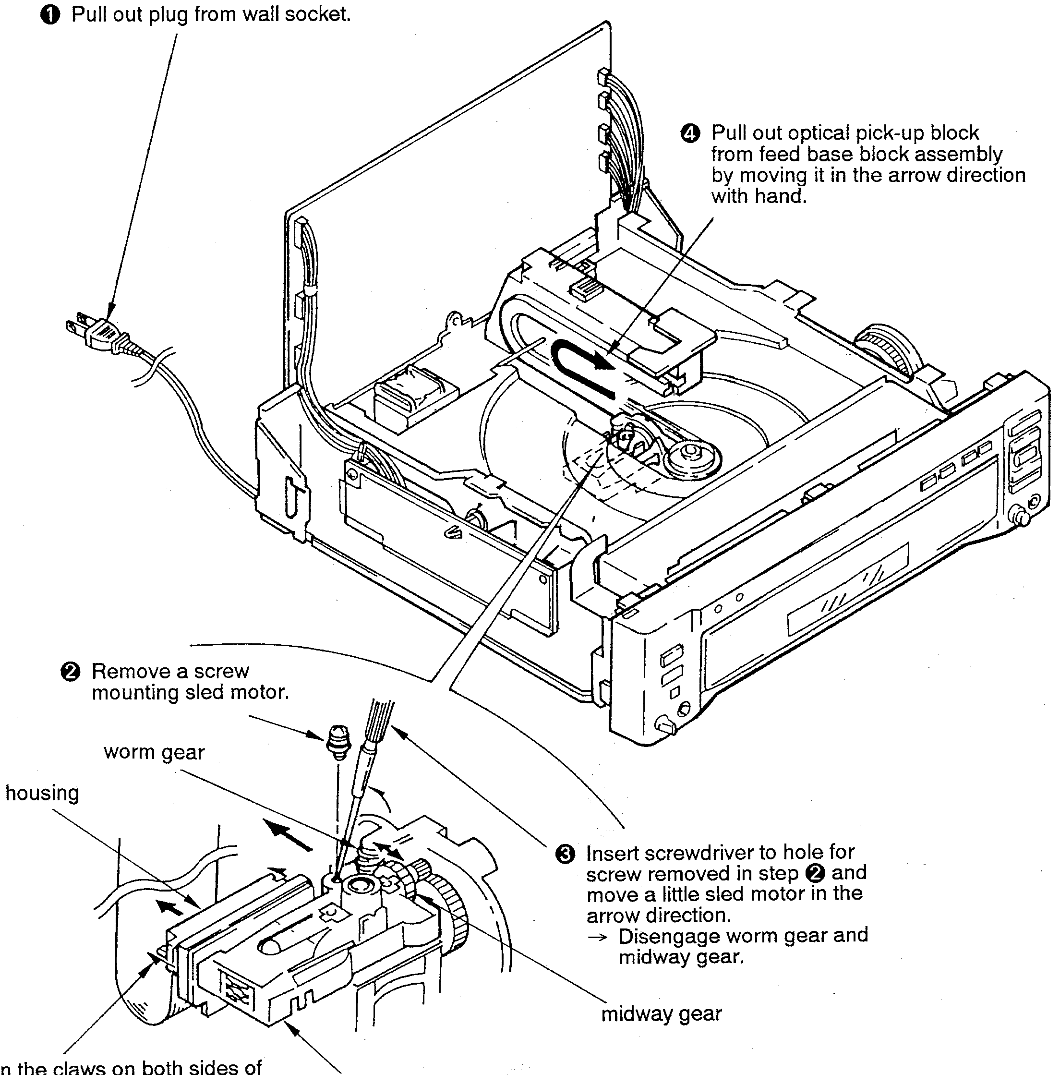
❻ Pull out plug from wall socket.

❹ Push FL DISPLAY button to turn off display.

❷ Turn power on in TP501 shorting-circuit condition. (Service mode is set.)

❽ Open the claws on both sides of housing and remove flat cable.

• DISASSEMBLE II (OPTICAL PICK-UP BLOCK MOTOR DOESN'T OPERATE)


worm gear
housing
midway gear
optical pivk-up block

❶ Pull out plug from wall socket.

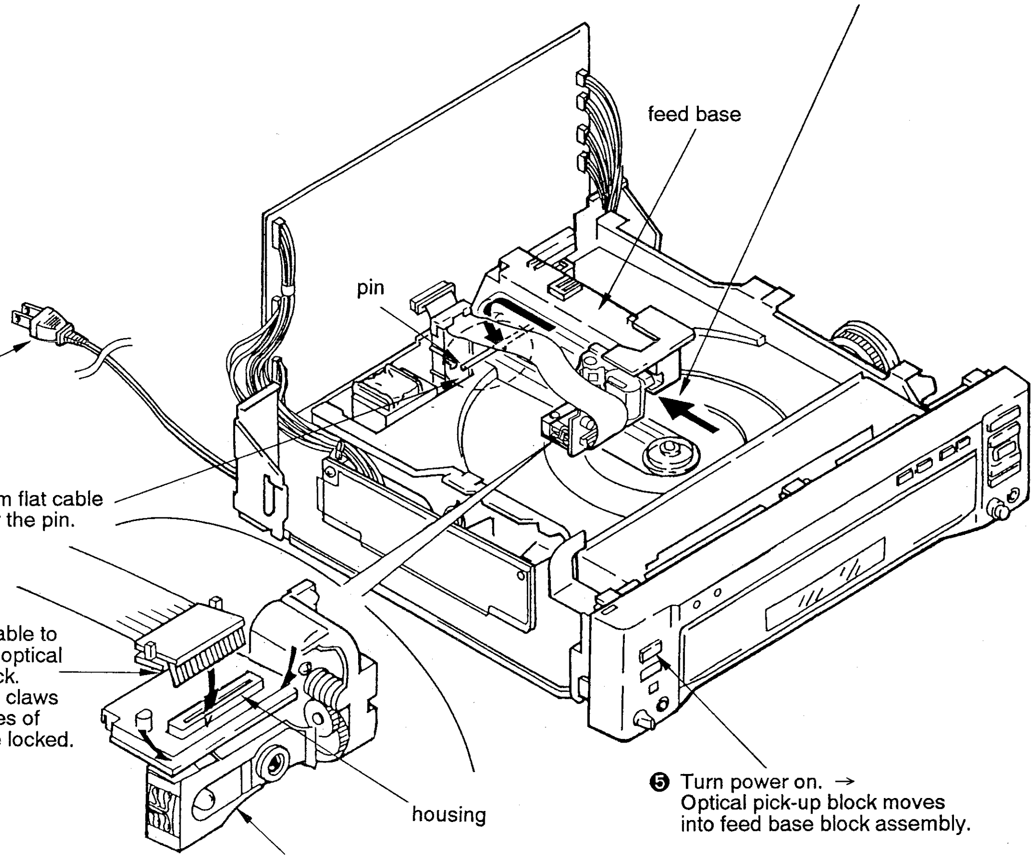
❷ Remove a screw mounting sled motor.

❸ Insert screwdriver to hole for screw removed in step ❷ and move a little sled motor in the arrow direction.
→ Disengage worm gear and midway gear.

❹ Pull out optical pick-up block from feed base block assembly by moving it in the arrow direction with hand.

❺ Open the claws on both sides of housing and remove flat cable.

• ASSEMBLE


feed base
pin
housing
optical pick-up block

❶ Insert flat cable to housing on optical pick-up block. Confirm the claws on both sides of housing are locked.

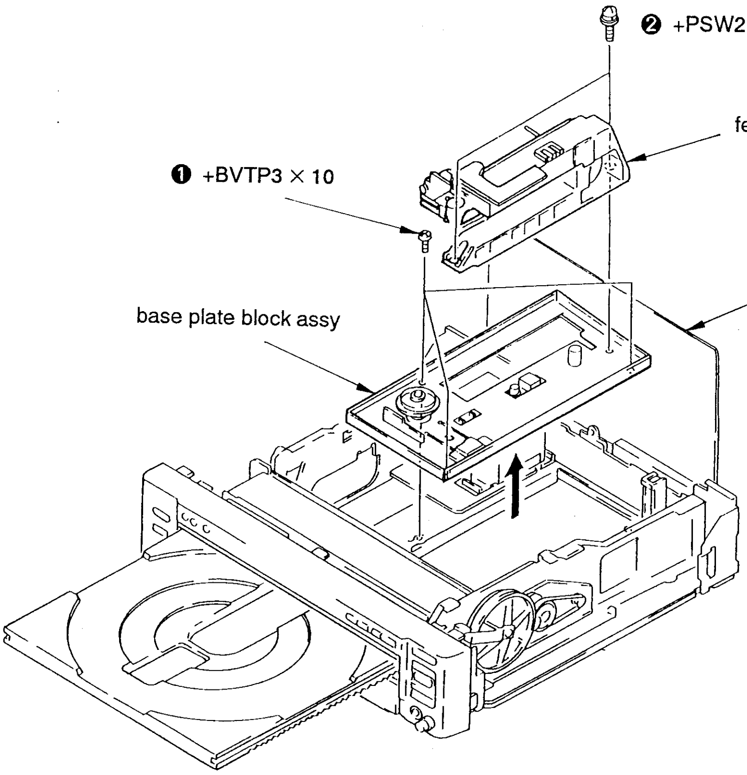
❷ Insert optical pick-up block to feed base block assembly.

❸ Confirm flat cable is over the pin.

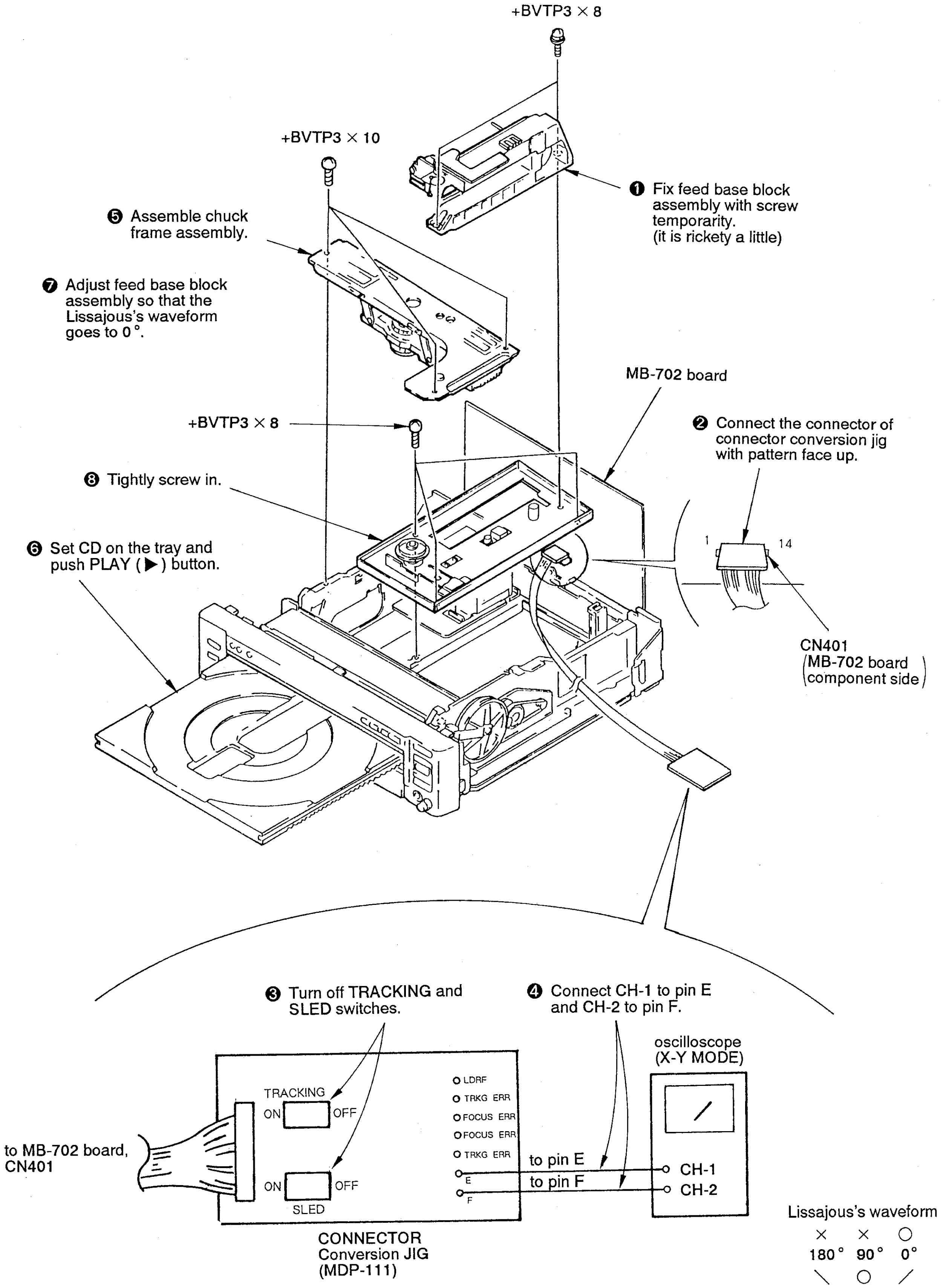
❹ Insert plug to wall socket.

❺ Turn power on. → Optical pick-up block moves into feed base block assembly.

2-5. MD CHASSIS ASSEMBLY (Base Plate Block and Feed Block Assy)


❷ +PSW2.6 × 8
feed block assy
❶ +BVTP3 × 10
MB-702 基板
base plate block assy

• **ASSEMBLE**



❶ Fix feed base block assembly with screw temporarity. (it is rickety a little)

❷ Connect the connector of connector conversion jig with pattern face up.

❸ Turn off TRACKING and SLED switches.

❹ Connect CH-1 to pin E and CH-2 to pin F.

❺ Assemble chuck frame assembly.

❻ Set CD on the tray and push PLAY (▶) button.

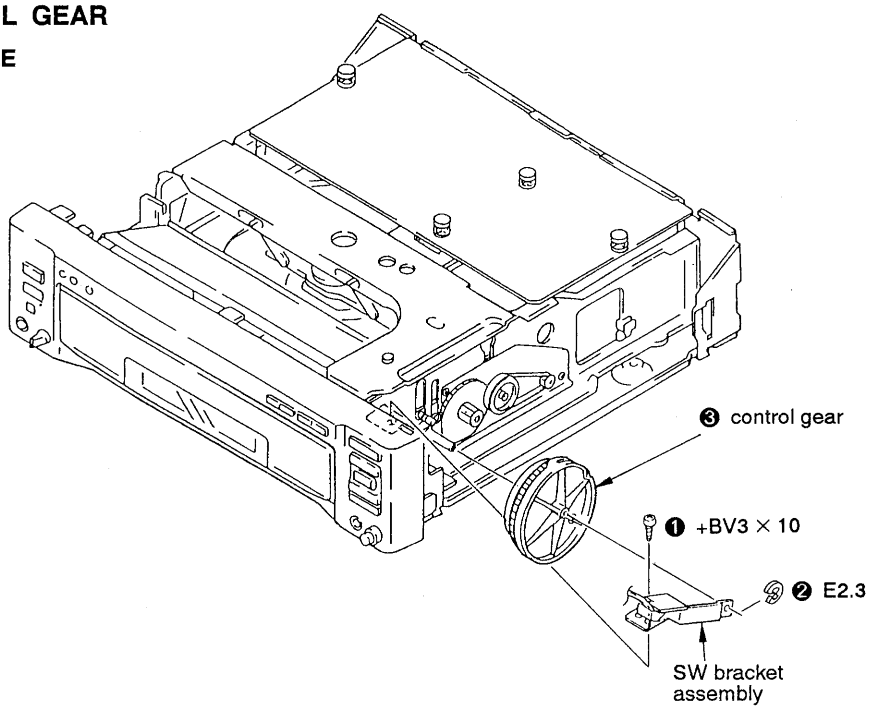
❼ Adjust feed base block assembly so that the Lissajous's waveform goes to 0 °.

❽ Tightly screw in.

+BVTP3 × 8
+BVTP3 × 10
+BVTP3 × 8
MB-702 board
1
14
CN401
(MB-702 board component side)
TRACKING
ON
OFF
ON
OFF
SLED
LDRF
TRKG ERR
FOCUS ERR
FOCUS ERR
TRKG ERR
E
F
to pin E
to pin F
oscilloscope
(X-Y MODE)
CH-1
CH-2
to MB-702 board, CN401
CONNECTOR
Conversion JIG
(MDP-111)
Lissajous's waveform
× × ○
180° 90° 0°

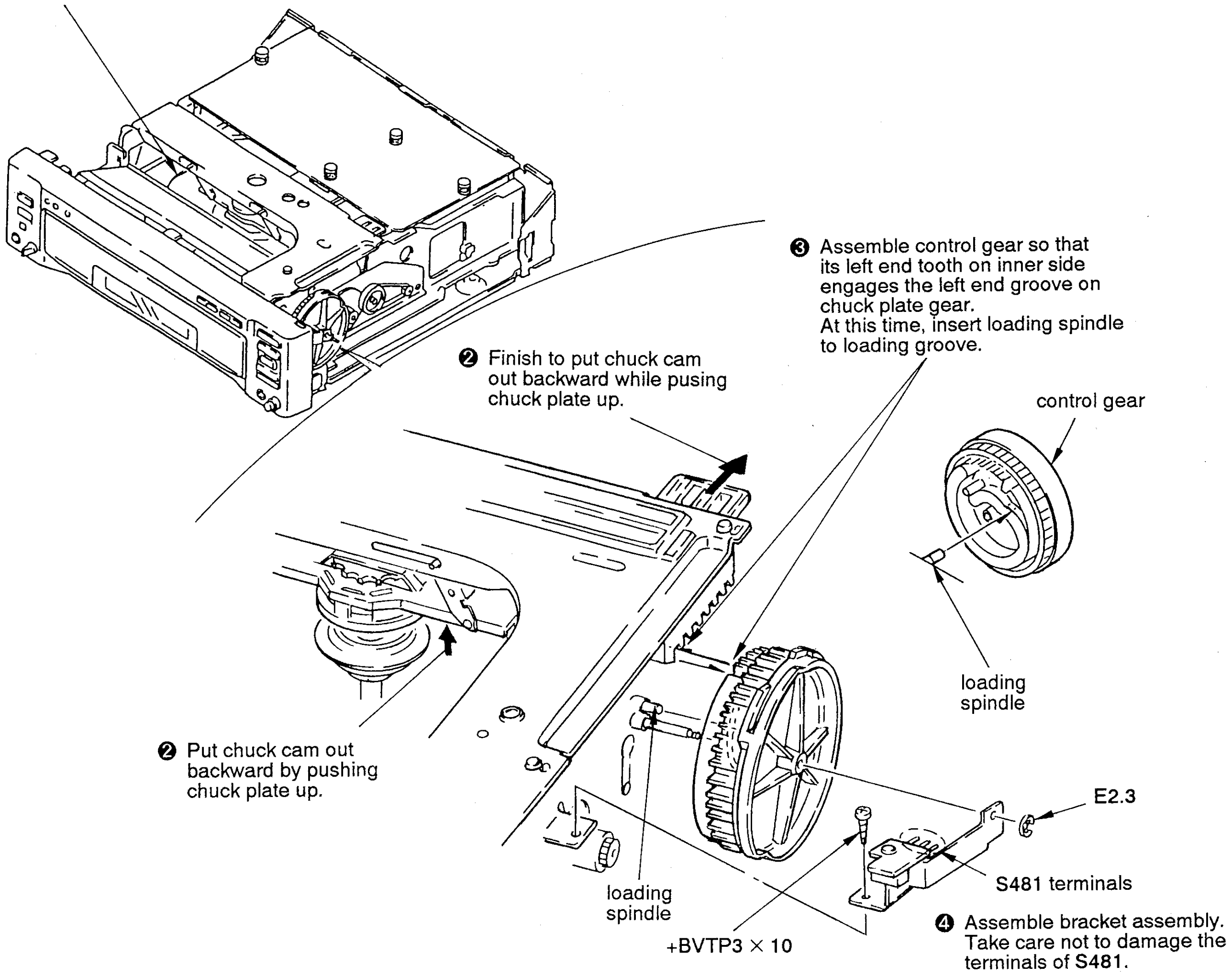
2-6. CONTROL GEAR

• DISASSEMBLE


❸ control gear
❶ +BV3 × 10
❷ E2.3
SW bracket assembly

• ASSEMBLE

❶ Make tray holding in the set.


control gear
loading spindle
E2.3
S481 terminals
loading spindle
+BVTP3 × 10

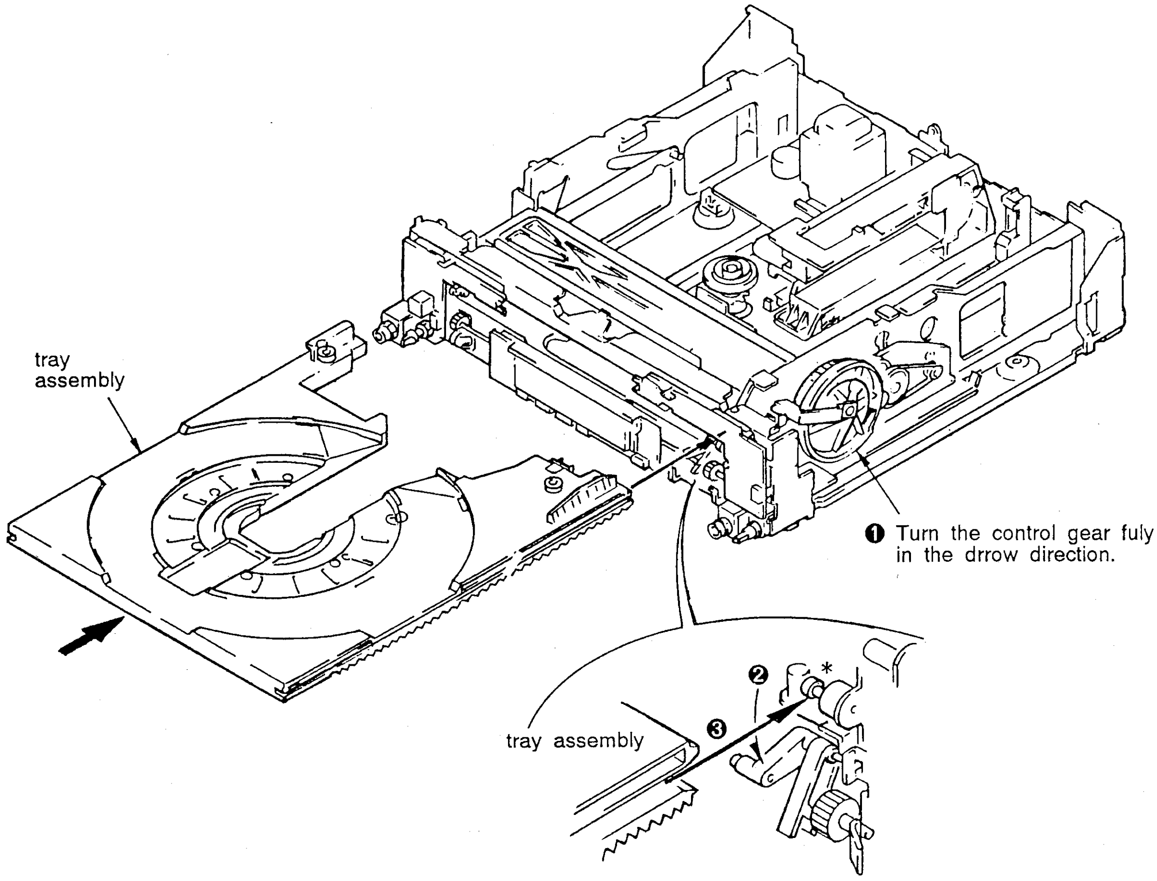
❷ Finish to put chuck cam out backward while pusing chuck plate up.

❷ Put chuck cam out backward by pushing chuck plate up.

❸ Assemble control gear so that its left end tooth on inner side engages the left end groove on chuck plate gear.
At this time, insert loading spindle to loading groove.

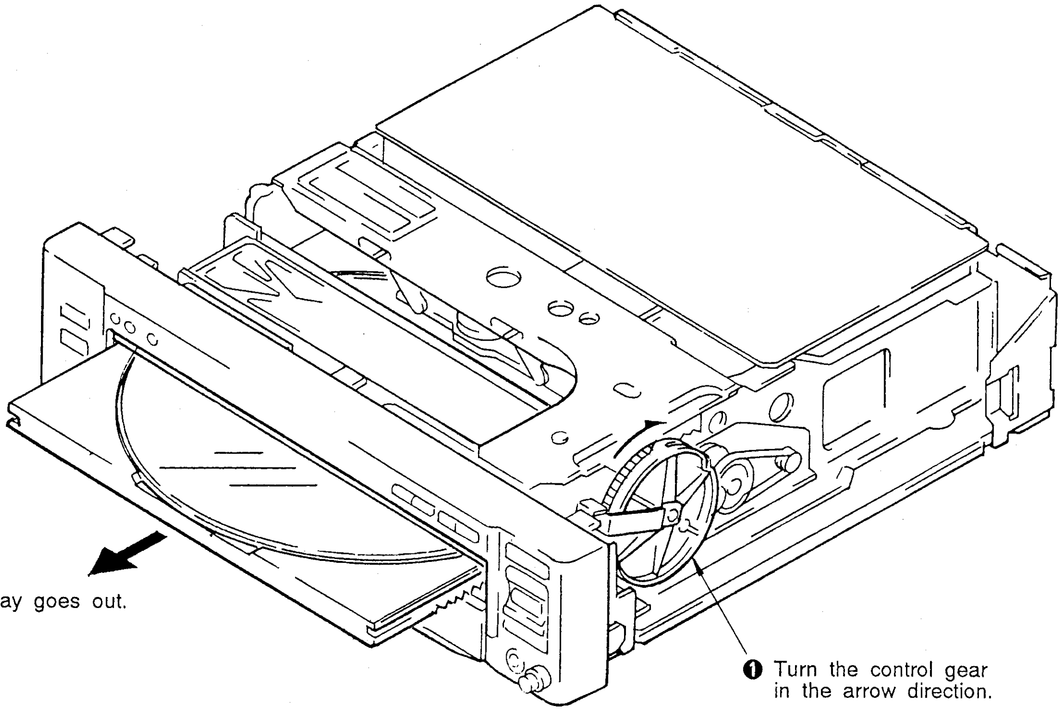
❹ Assemble bracket assembly. Take care not to damage the terminals of **S481**.

2-7. TRAY ASSEMBLY INSERTION.


tray assembly
tray assembly
❷
*
❸

❶ Turn the control gear fuly in the drrow direction.

2-8. PUTTING OUT DISC WHEN A TROUBLE HAS OCCURRED WITH THE DISK LOADED

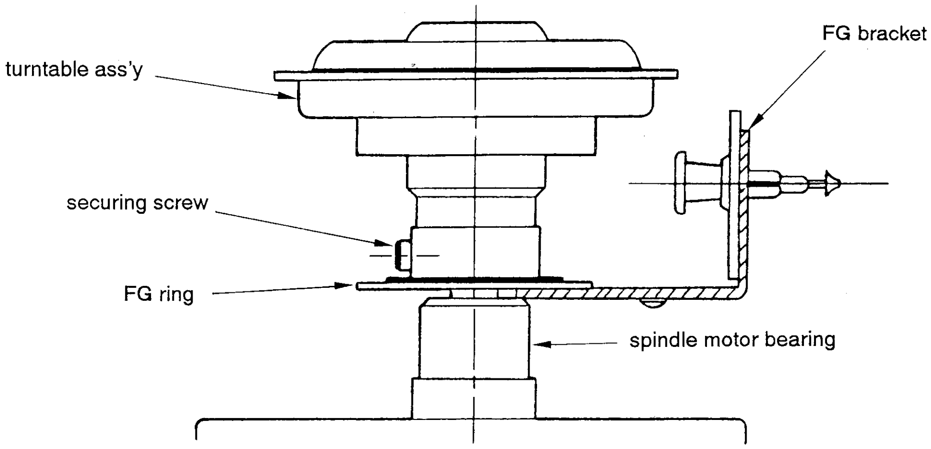


❷ Tray goes out.

❶ Turn the control gear in the arrow direction.

2-9. TURNTABLE ASSEMBLY HEIGHT ADJUSTMENT

1. Open the tray by turning the control gear recured on the right side of the set clockwise.
2. Remove chucking assembly.
3. Remove FG bracket with FG board.
4. Replace turntable assembly.
   Adjust turntable assembly height using FG bracket (1 mm thickness) as followings.

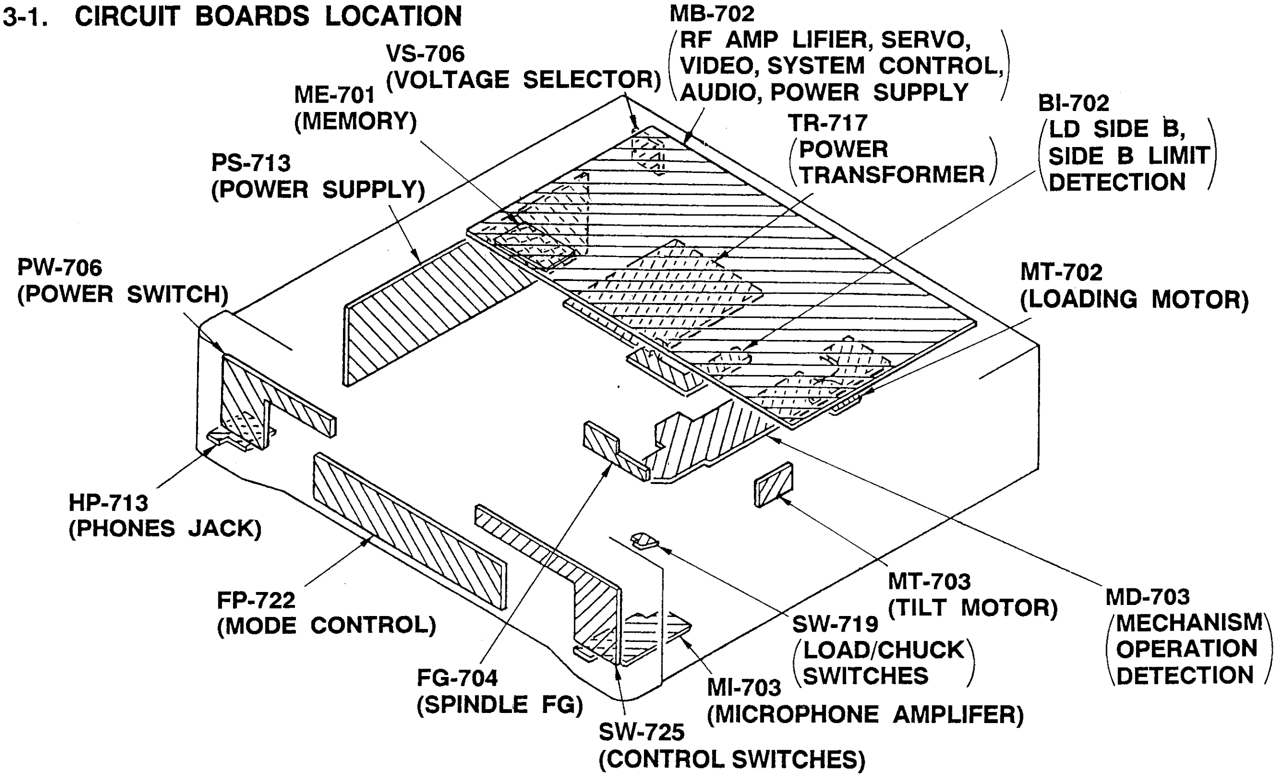

FG bracket
turntable ass'y
securing screw
FG ring
spindle motor bearing

Insert FG bracket between spindle motor bearing and FG ring to set height and tighten securing screw.

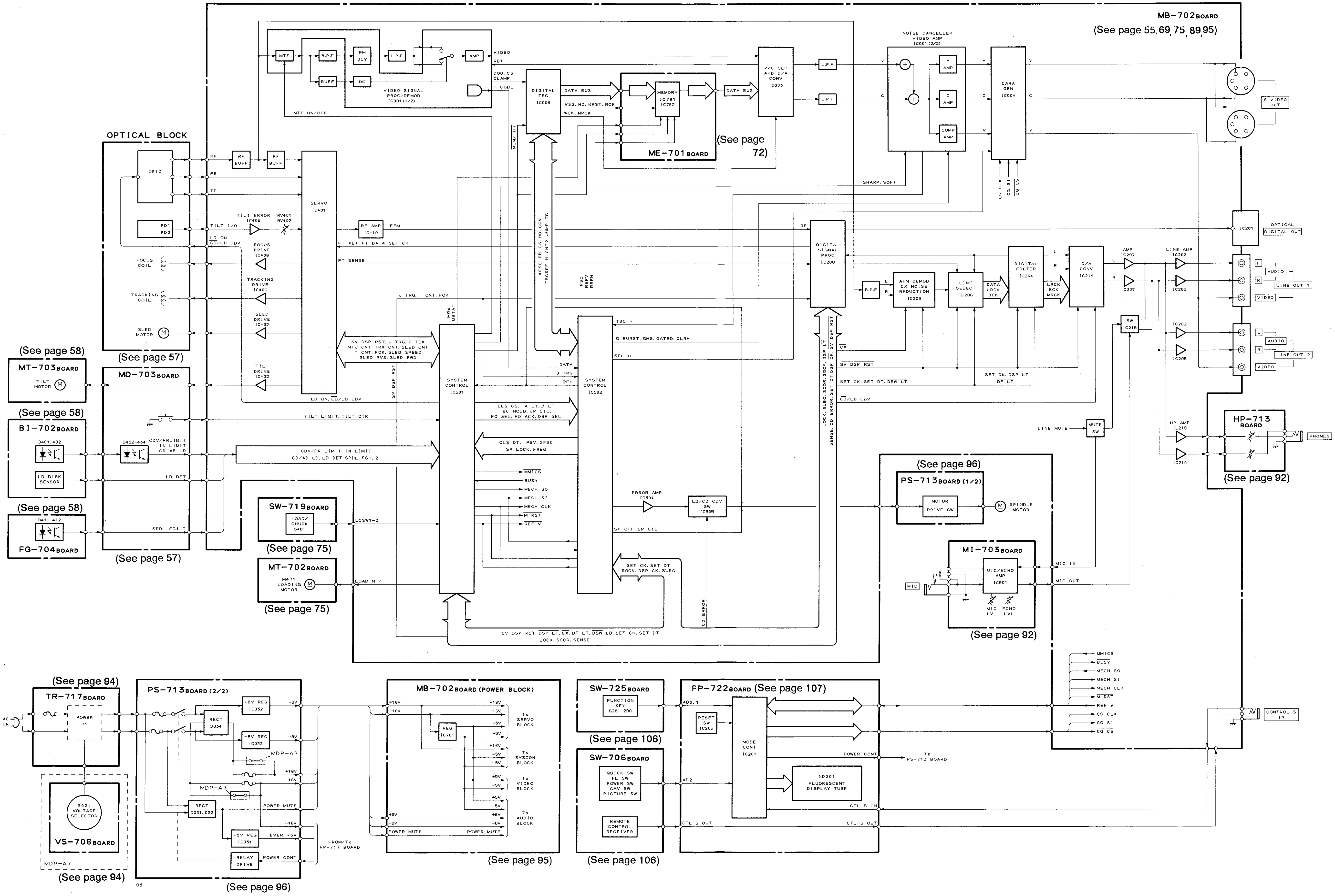
5. Fit FG bracket with FG board in its original position.

SECTION 3
DIAGRAMS

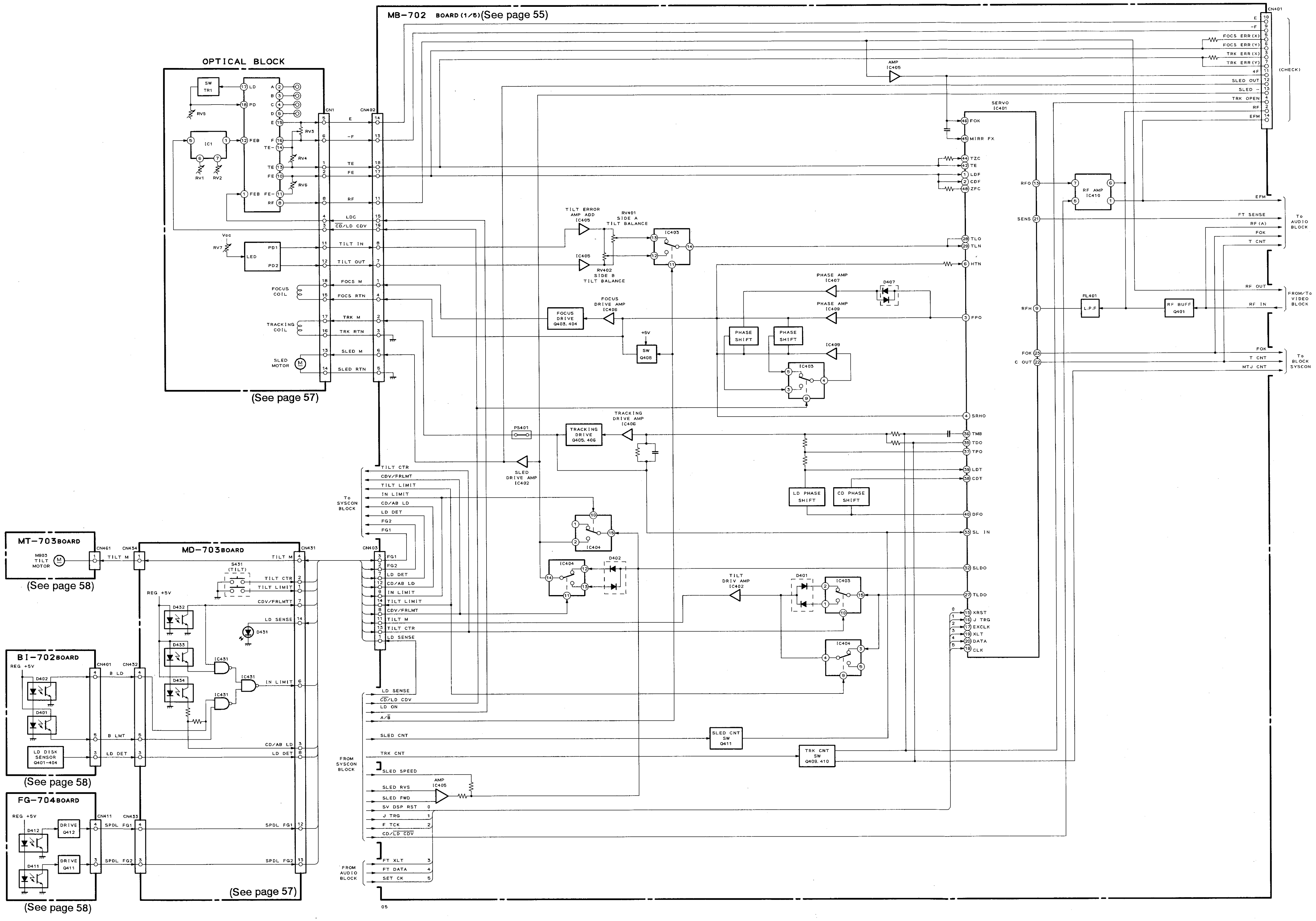
3-1. CIRCUIT BOARDS LOCATION


MB-702
(RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY)
VS-706
(VOLTAGE SELECTOR)
ME-701
(MEMORY)
TR-717
(POWER TRANSFORMER)
BI-702
(LD SIDE B, SIDE B LIMIT DETECTION)
PS-713
(POWER SUPPLY)
PW-706
(POWER SWITCH)
MT-702
(LOADING MOTOR)
HP-713
(PHONES JACK)
FP-722
(MODE CONTROL)
MT-703
(TILT MOTOR)
MD-703
(MECHANISM OPERATION DETECTION)
SW-719
(LOAD/CHUCK SWITCHES)
FG-704
(SPINDLE FG)
MI-703
(MICROPHONE AMPLIFER)
SW-725
(CONTROL SWITCHES)

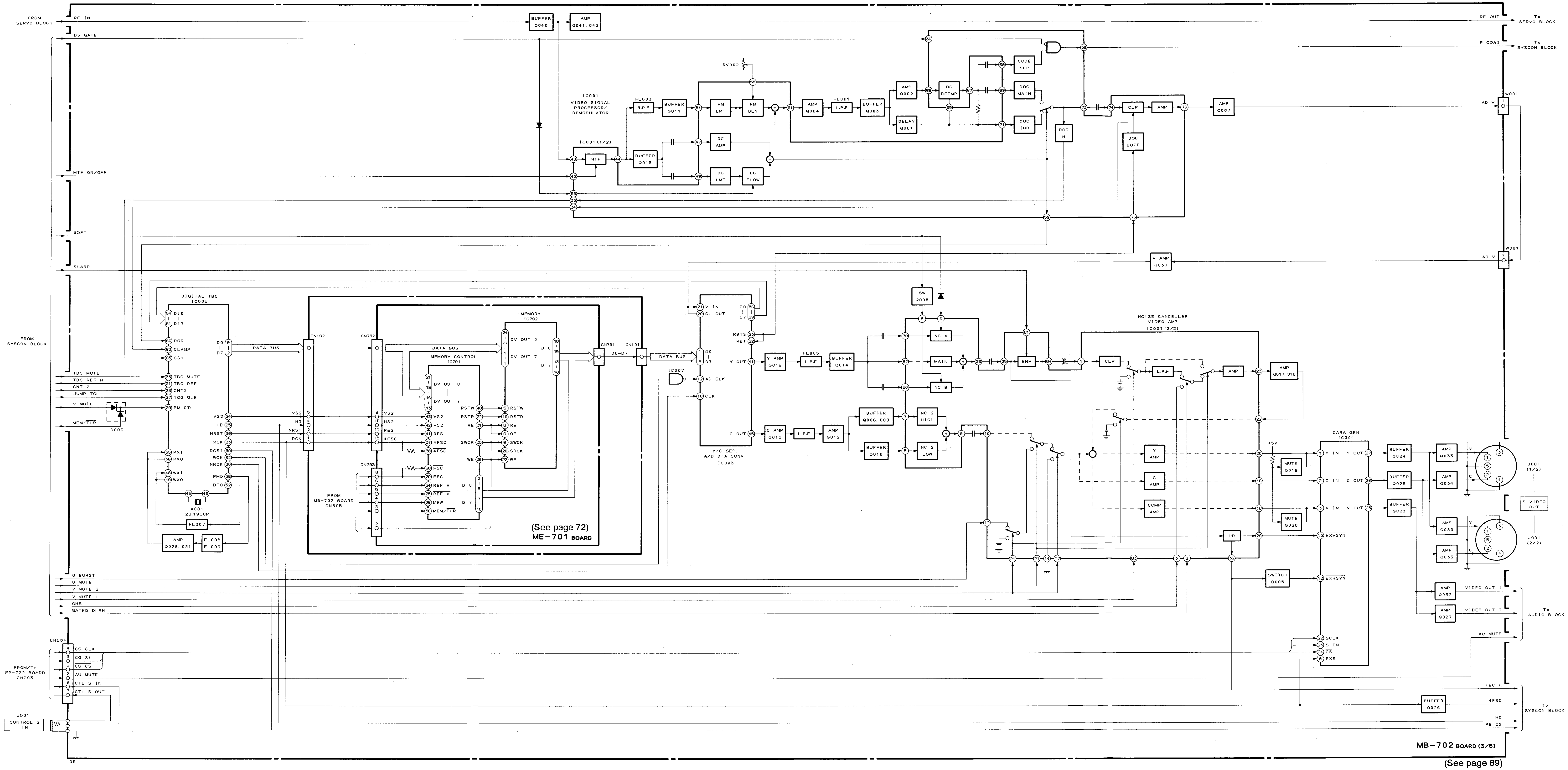
3-2. OVERALL BLOCK DIAGRAM


MB-702 BOARD
(See page 55, 69, 75, 89, 95)
OPTICAL BLOCK
OEIC
PD1
PD2
FOCUS COIL
TRACKING COIL
SLED MOTOR
(See page 57)
RF
FE
TE
TILT I/O
LD ON
CD/LD CDV
RF BUFF
RF BUFF
SERVO IC401
TILT ERROR IC405
RV401 RV402
FOCUS DRIVE IC406
TRACKING DRIVE IC406
SLED DRIVE IC402
TILT DRIVE IC402
RF AMP IC410
EFM
FT XLT, FT DATA, SET CK
FT SENSE
J TRG, T CNT, FOK
MTF
B.P.F
FM DLY
L.P.F
AMP
BUFF
DC
VIDEO SIGNAL PROC/DEMOD IC001 (1/2)
MTF ON/OFF
VIDEO
RBT
DOD, CS CLAMP
P CODE
DIGITAL TBC IC005
DATA BUS
VS2, HD, NRST, RCK
WCK, NRCK
MEM/THR
MEMORY IC791 IC792
ME-701 BOARD
(See page 72)
DATA BUS
Y/C SEP A/D D/A CONV IC003
L.P.F
L.P.F
NOISE CANCELLER VIDEO AMP IC001 (2/2)
Y AMP
C AMP
COMP AMP
Y
C
V
CARA GEN IC004
CG CLK
CG SI
CG CS
S VIDEO OUT
SHARP, SOFT
4FSC, PB CS, HD, CGV
TBCREF H, CNT2, JUMP TGL
FSC REFV REFH
MWE MSTAT
SV DSP RST, J TRG, F TCK
MTJ CNT, TRK CNT, SLED CNT
T CNT, FOK, SLED SPEED
SLED RVS, SLED FWD
SV DSP RST
SYSTEM CONTROL IC501
SYSTEM CONTROL IC502
DATA
J TRG
2FH
TBC H
G BURST, GHS, GATED, DLRH
SEL H
LD ON, CD/LD CDV
CLS CS, A LT, B LT
TBC HOLD, JP CTL,
FQ SEL, FQ ACK, DSP SEL
TILT LIMIT, TILT CTR
CLS DT, PBV, 2FSC
SP LOCK, FREQ
CDV/FR LIMIT, IN LIMIT
CD/AB LD, LD DET, SPDL FG1, 2
MMICS
BUSY
MECH SO
MECH SI
MECH CLK
M RST
REF V
ERROR AMP IC504
LD/CD CDV SW IC505
SP OFF, SP CTL
SET CK, SET DT
SQCK, DSP CK, SUBQ
CD ERROR
SV DSP RST, DSP LT, CX, DF LT, DSW LD, SET CK, SET DT
LOCK, SCOR, SENSE
LOCK, SUBQ, SCOR, SQCK, DSP LT
SENSE, CD ERROR, SET DT, DSP CK, SV DSP RST
RF
DIGITAL SIGNAL PROC IC208
IC201
OPTICAL DIGITAL OUT
B.P.F
L
R
AFM DEMOD CX NOISE REDUCTION IC203
LINE SELECT IC206
DATA LRCK BCK
DIGITAL FILTER IC204
LRCK BCK MRCK
D/A CONV IC214
AMP IC207
IC207
LINE AMP IC202
IC205
IC202
IC205
L
R
AUDIO
LINE OUT 1
VIDEO
LINE OUT 2
CX
SV DSP RST
SET CK, SET DT, DSW LT
SET CK, DSP LT
DF LT
CD/LD CDV
SW IC215
LINE MUTE
MUTE SW
HP AMP IC210
IC210
HP-713 BOARD
PHONES
(See page 92)
(See page 58)
MT-703 BOARD
TILT MOTOR
(See page 58)
BI-702 BOARD
D401, 402
LD DISK SENSOR
(See page 58)
D411, 412
FG-704 BOARD
MD-703 BOARD
D432-434
CDV/FRLIMIT IN LIMIT CD AB LD
LD DET
SPDL FG1, 2
(See page 57)
SW-719 BOARD
LOAD/CHUCK S481
LCSW1-3
(See page 75)
MT-702 BOARD
M471 LOADING MOTOR
LOAD M+/-
(See page 75)
(See page 96)
PS-713 BOARD (1/2)
MOTOR DRIVE SW
SPINDLE MOTOR
MI-703 BOARD
MIC
MIC/ECHO AMP IC501
MIC LVL
ECHO LVL
MIC IN
MIC OUT
(See page 92)
(See page 94)
TR-717 BOARD
AC IN
POWER T1
S021 VOLTAGE SELECTOR
VS-706 BOARD
MDP-A7
(See page 94)
PS-713 BOARD (2/2)
+8V REG IC032
RECT D034
-8V REG IC033
MDP-A7
MDP-A7
RECT D031, 032
+5V REG IC031
RELAY DRIVE
+8V
-8V
+16V
-16V
POWER MUTE
-16V
EVER +5V
POWER CONT
FROM/To FP-717 BOARD
05
(See page 96)
MB-702 BOARD (POWER BLOCK)
+16V
-16V
REG IC701
+5V
-5V
To SERVO BLOCK
To SYSCON BLOCK
To VIDEO BLOCK
+8V
-8V
POWER MUTE
To AUDIO BLOCK
(See page 95)
SW-725 BOARD
FUNCTION KEY S281-290
(See page 106)
SW-706 BOARD
QUICK SW
FL SW
POWER SW
CAV SW
PICTURE SW
REMOTE CONTROL RECEIVER
(See page 106)
FP-722 BOARD (See page 107)
AD0, 1
RESET SW IC202
AD2
MODE CONT IC201
POWER CONT
To PS-713 BOARD
ND201 FLUORESCENT DISPLAY TUBE
CTL S IN
CTL S OUT
CTL S OUT
MMICS
BUSY
MECH SO
MECH SI
MECH CLK
M RST
REF V
CG CLK
CG SI
CG CS
CONTROL S IN

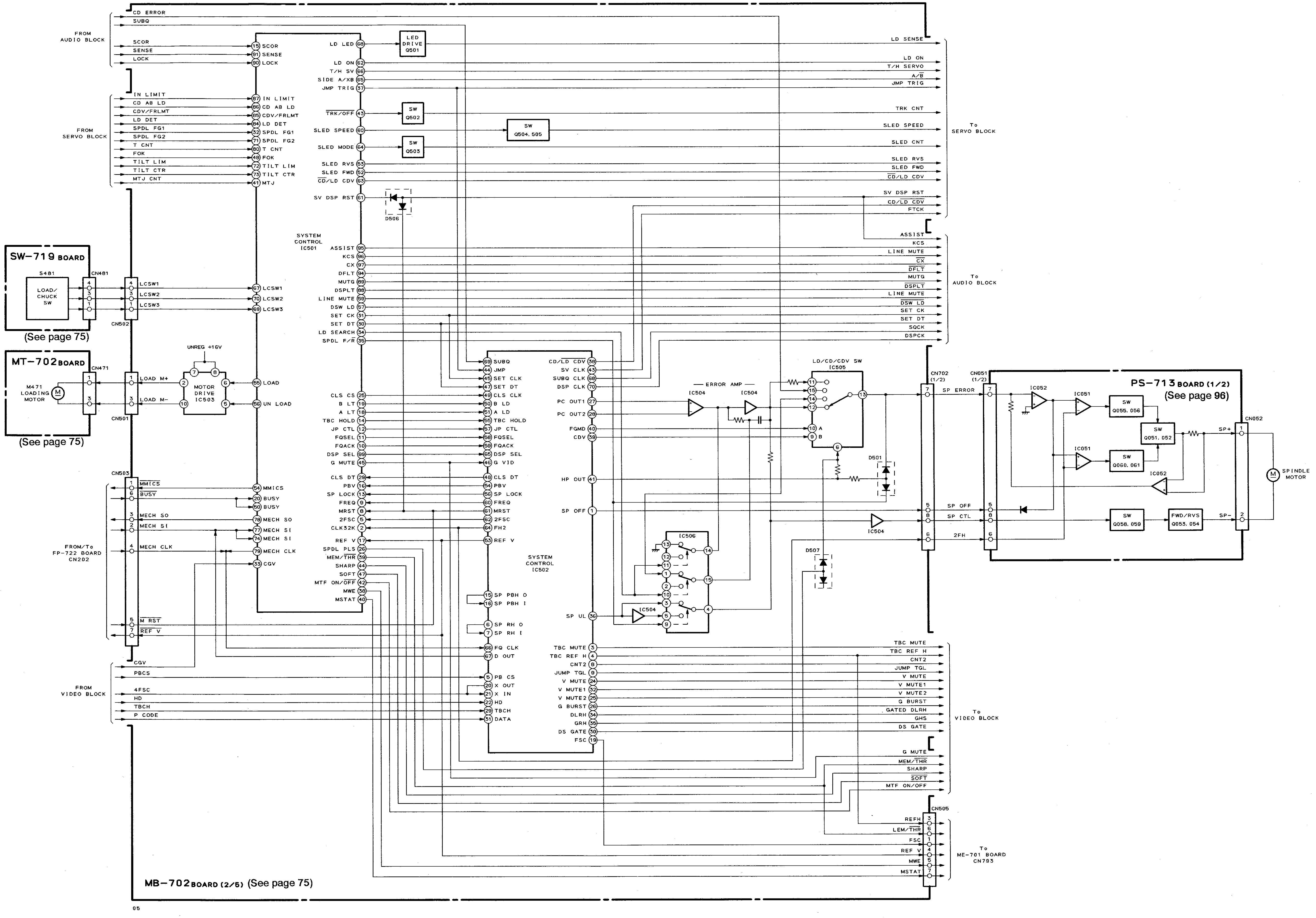
3-3. SERVO BLOCK DIAGRAM


MB-702 BOARD (1/5)(See page 55)
OPTICAL BLOCK
(See page 57)
MT-703 BOARD
M803 TILT MOTOR
(See page 58)
MD-703 BOARD
(See page 57)
BI-702 BOARD
LD DISK SENSOR Q401-404
(See page 58)
FG-704 BOARD
(See page 58)
SERVO IC401
RF AMP IC410
RF BUFF Q401
L.P.F
FOCUS DRIVE Q403, 404
TRACKING DRIVE Q405, 406
SLED DRIVE AMP IC402
TILT ERROR AMP ADD IC405
RV401 SIDE A TILT BALANCE
RV402 SIDE B TILT BALANCE
PHASE AMP IC407
PHASE AMP IC409
PHASE SHIFT
LD PHASE SHIFT
CD PHASE SHIFT
TILT DRIV AMP IC402
SLED CNT SW Q411
TRK CNT SW Q409, 410
CN401
(CHECK)
To AUDIO BLOCK
FROM/To VIDEO BLOCK
To BLOCK SYSCON
To SYSCON BLOCK
FROM SYSCON BLOCK
FROM AUDIO BLOCK
FOCUS COIL
TRACKING COIL
SLED MOTOR
TILT CTR
CDV/FRLMT
TILT LIMIT
IN LIMIT
CD/AB LD
LD DET
FG2
FG1
LD SENSE
CD/LD CDV
LD ON
SLED CNT
TRK CNT
SLED SPEED
SLED RVS
SLED FWD
SV DSP RST
J TRG
F TCK
FT XLT
FT DATA
SET CK
FOCS ERR (X)
FOCS ERR (Y)
TRK ERR (X)
TRK ERR (Y)
SLED OUT
TRK OPEN
EFM
FT SENSE
FOK
T CNT
RF OUT
RF IN
MTJ CNT

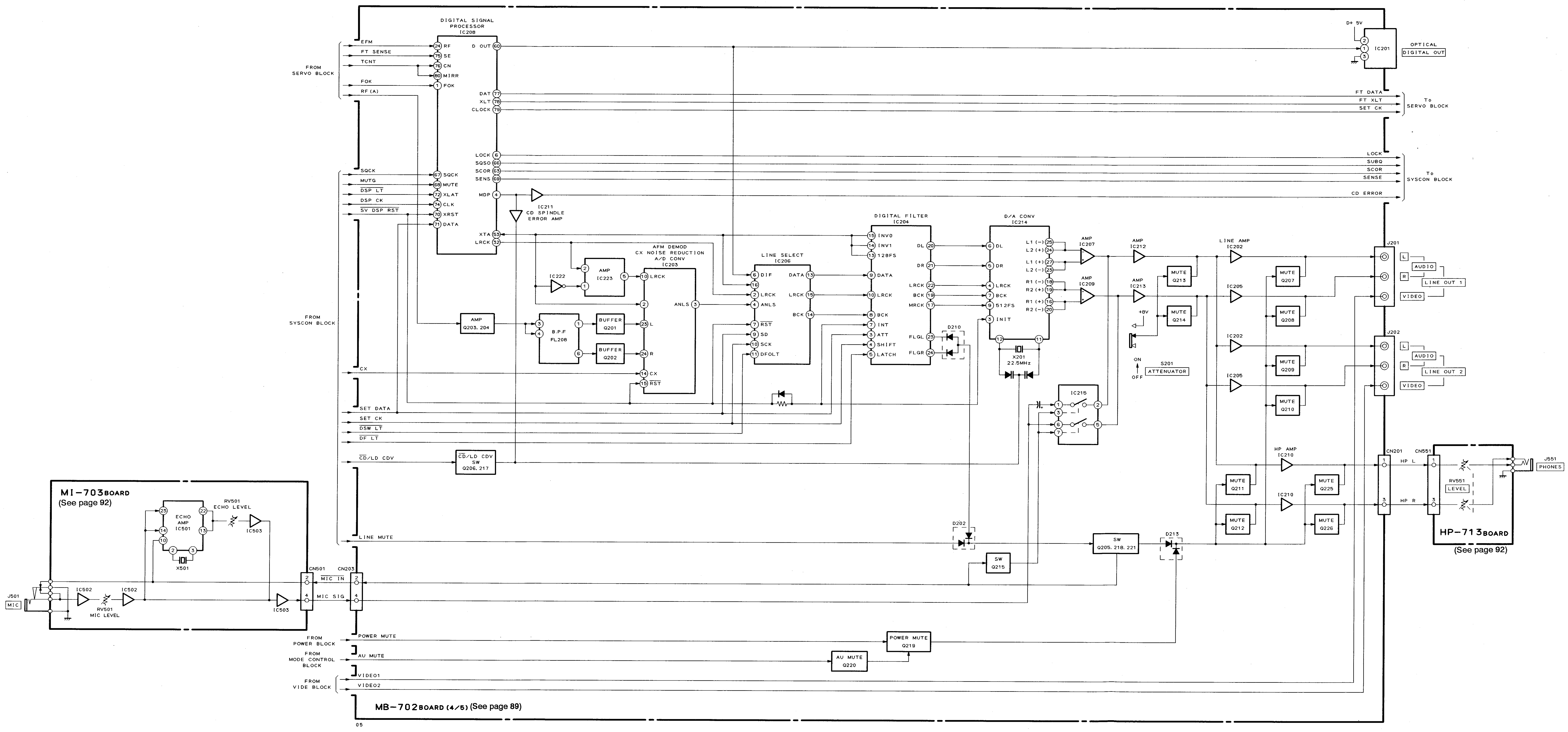
3-4. VIDEO BLOCK DIAGRAM


FROM SERVO BLOCK
RF IN
DS GATE
MTF ON/OFF
SOFT
SHARP
FROM SYSCON BLOCK
BUFFER Q040
AMP Q041, 042
RF OUT
To SERVO BLOCK
P COAD
To SYSCON BLOCK
IC001 VIDEO SIGNAL PROCESSOR/ DEMODULATOR
IC001 (1/2)
MTF
RV002
FL002 B.P.F
BUFFER Q011
BUFFER Q013
FM LMT
FM DLY
DC AMP
DC LMT
DC FLOW
AMP Q004
FL001 L.P.F
BUFFER Q003
AMP Q002
DELAY Q001
DC DEEMP
CODE SEP
DOC MAIN
DOC IHD
DOC H
DOC BUFF
CLP
AMP
AMP Q007
W001
AD V
V AMP Q039
DIGITAL TBC IC005
DI0 | DI7
DOD
CLAMP
CS1
TBC MUTE
TBC REF H
CNT 2
JUMP TGL
V MUTE
MEM/THR
D006
TBC REF
CNT2
TOG GLE
PM CTL
PXI
PXO
WXI
WXO
X001 28.1958M
FL007
AMP Q028, 031
FL008 FL009
D0 | D7
DATA BUS
VS2
HD
NRST
RCK
DCS1
WCK
NRCK
PMO
DTO
CN102
CN792
CN793
MEMORY CONTROL IC791
MEMORY IC792
DV OUT 0 | DV OUT 7
HS2
RES
4FSC
FSC
REF H
REF V
MEW
RSTW
RSTR
RE
OE
SWCK
SRCK
WE
FROM MB-702 BOARD CN505
(See page 72)
ME-701 BOARD
CN791
CN101
D0-D7
IC007
V IN
CL OUT
C0 | C7
RBTS
RBT
AD CLK
CLK
Y OUT
C OUT
Y/C SEP. A/D D/A CONV. IC003
Y AMP Q016
FL005 L.P.F
BUFFER Q014
C AMP Q015
L.P.F
AMP Q012
BUFFER Q006, 009
BUFFER Q010
SW Q005
NC A
MAIN
NC B
NC 2 HIGH
NC 2 LOW
ENH
NOISE CANCELLER VIDEO AMP IC001 (2/2)
CLP
L.P.F
AMP
AMP Q017, 018
Y AMP
C AMP
COMP AMP
HD
+5V
MUTE Q019
MUTE Q020
SWITCH Q005
CARA GEN IC004
Y IN
Y OUT
C IN
C OUT
V IN
V OUT
EXVSYN
EXHSYN
SCLK
S IN
CS
EXS
BUFFER Q024
BUFFER Q025
BUFFER Q023
AMP Q033
AMP Q034
AMP Q030
AMP Q035
Y
C
J001 (1/2)
J001 (2/2)
S VIDEO OUT
AMP Q032
AMP Q027
VIDEO OUT 1
VIDEO OUT 2
AU MUTE
To AUDIO BLOCK
TBC H
BUFFER Q026
4FSC
HD
PB CS
To SYSCON BLOCK
G BURST
G MUTE
V MUTE 2
V MUTE 1
GHS
GATED DLRH
CN504
CG CLK
CG SI
CG CS
AU MUTE
CTL S IN
CTL S OUT
FROM/To FP-722 BOARD CN203
J501
CONTROL S IN
05
MB-702 BOARD (3/5)
(See page 69)

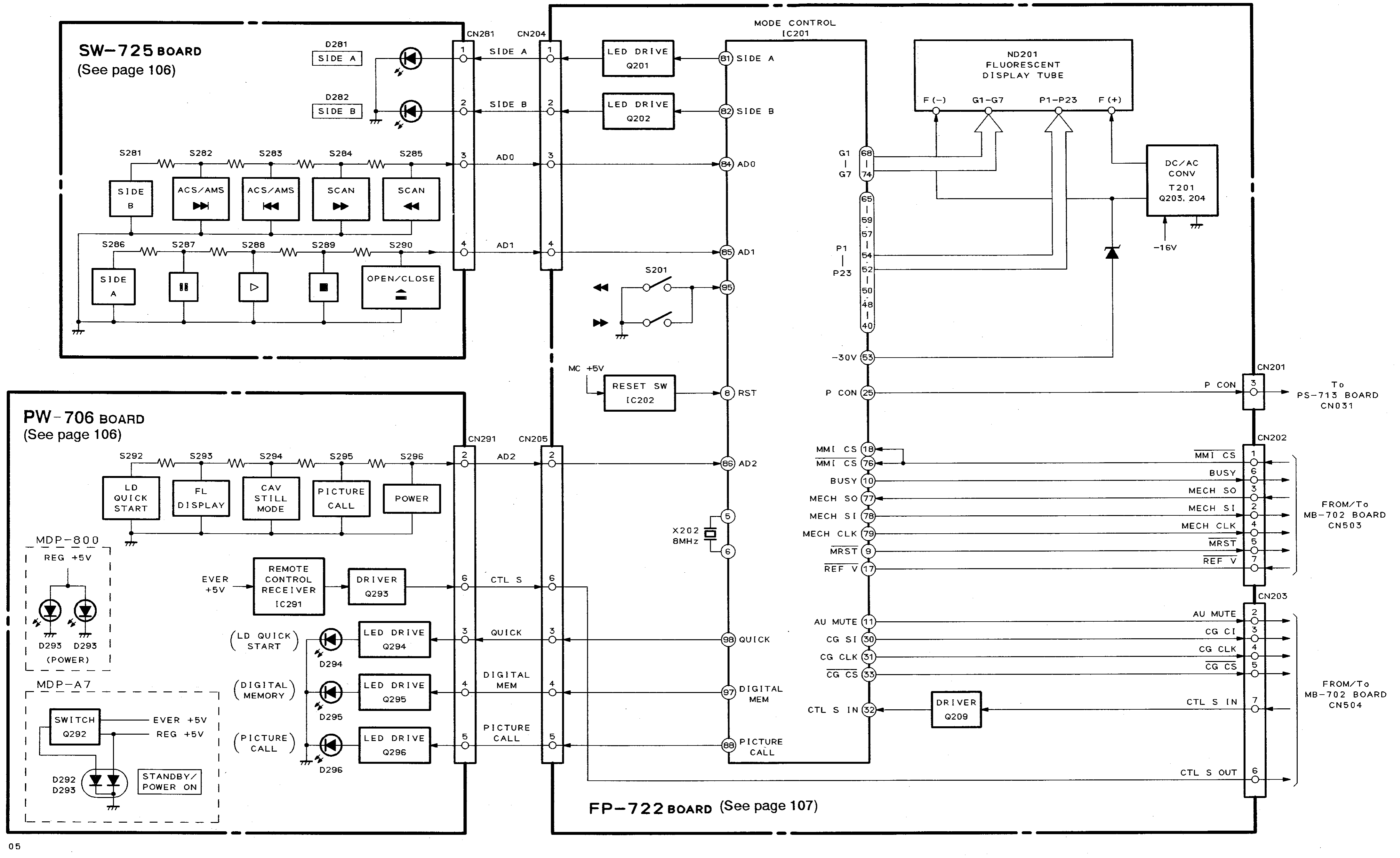
3-5. SYSTEM CONTROL BLOCK DIAGRAM


FROM AUDIO BLOCK
CD ERROR
SUBQ
SCOR
SENSE
LOCK
FROM SERVO BLOCK
IN LIMIT
CD AB LD
CDV/FRLMT
LD DET
SPDL FG1
SPDL FG2
T CNT
FOK
TILT LIM
TILT CTR
MTJ CNT
SYSTEM CONTROL IC501
LD LED
LED DRIVE Q501
LD ON
T/H SV
SIDE A/XB
JMP TRIG
TRK/OFF
SW Q502
SLED SPEED
SW Q504, 505
SLED MODE
SW Q503
SLED RVS
SLED FWD
CD/LD CDV
SV DSP RST
D506
ASSIST
KCS
CX
DFLT
MUTG
DSPLT
LINE MUTE
DSW LD
SET CK
SET DT
LD SEARCH
SPDL F/R
LCSW1
LCSW2
LCSW3
SW-719 BOARD
S481
CN481
LOAD/CHUCK SW
(See page 75)
CN502
MT-702 BOARD
CN471
M471 LOADING MOTOR
(See page 75)
CN501
LOAD M+
LOAD M−
UNREG +16V
MOTOR DRIVE IC503
LOAD
UN LOAD
CN503
MMICS
BUSY
MECH SO
MECH SI
MECH CLK
CGV
FROM/To FP-722 BOARD CN202
M RST
REF V
FROM VIDEO BLOCK
PBCS
4FSC
HD
TBCH
P CODE
CLS CS
B LT
A LT
TBC HOLD
JP CTL
FQSEL
FQACK
DSP SEL
G MUTE
CLS DT
PBV
SP LOCK
FREQ
MRST
2FSC
CLK32K
SPDL PLS
MEM/THR
SHARP
SOFT
MTF ON/OFF
MWE
MSTAT
SUBQ
JMP
SET CLK
SET DT
CLS CLK
B LD
A LD
TBC HOLD
JP CTL
FQSEL
FQACK
DSP SEL
G VID
CLS DT
PBV
SP LOCK
FREQ
MRST
2FSC
FH2
REF V
SYSTEM CONTROL IC502
SP PBH O
SP PBH I
SP RH O
SP RH I
FQ CLK
D OUT
PB CS
X OUT
X IN
HD
TBCH
DATA
CD/LD CDV
SV CLK
SUBQ CLK
DSP CLK
PC OUT1
PC OUT2
FGMD
CDV
HP OUT
SP OFF
SP UL
TBC MUTE
TBC REF H
CNT2
JUMP TGL
V MUTE
V MUTE1
V MUTE2
G BURST
DLRH
GRH
DS GATE
FSC
ERROR AMP
IC504
IC504
LD/CD/CDV SW IC505
A
B
D501
D507
IC506
IC504
IC504
LD SENSE
LD ON
T/H SERVO
A/B
JMP TRIG
TRK CNT
SLED SPEED
SLED CNT
SLED RVS
SLED FWD
CD/LD CDV
SV DSP RST
CD/LD CDV
FTCK
To SERVO BLOCK
ASSIST
KCS
LINE MUTE
CX
DFLT
MUTG
DSPLT
LINE MUTE
DSW LD
SET CK
SET DT
SQCK
DSPCK
To AUDIO BLOCK
CN702 (1/2)
CN051 (1/2)
SP ERROR
SP OFF
SP CTL
2FH
PS-713 BOARD (1/2)
(See page 96)
IC052
IC051
IC051
SW Q055, 056
SW Q051, 052
SW Q060, 061
IC052
SW Q058, 059
FWD/RVS Q053, 054
CN052
SP+
SP−
SPINDLE MOTOR
TBC MUTE
TBC REF H
CNT2
JUMP TGL
V MUTE
V MUTE1
V MUTE2
G BURST
GATED DLRH
GHS
DS GATE
To VIDEO BLOCK
G MUTE
MEM/THR
SHARP
SOFT
MTF ON/OFF
CN505
REFH
LEM/THR
FSC
REF V
MWE
MSTAT
To ME-701 BOARD CN783
MB-702 BOARD (2/6) (See page 75)
05

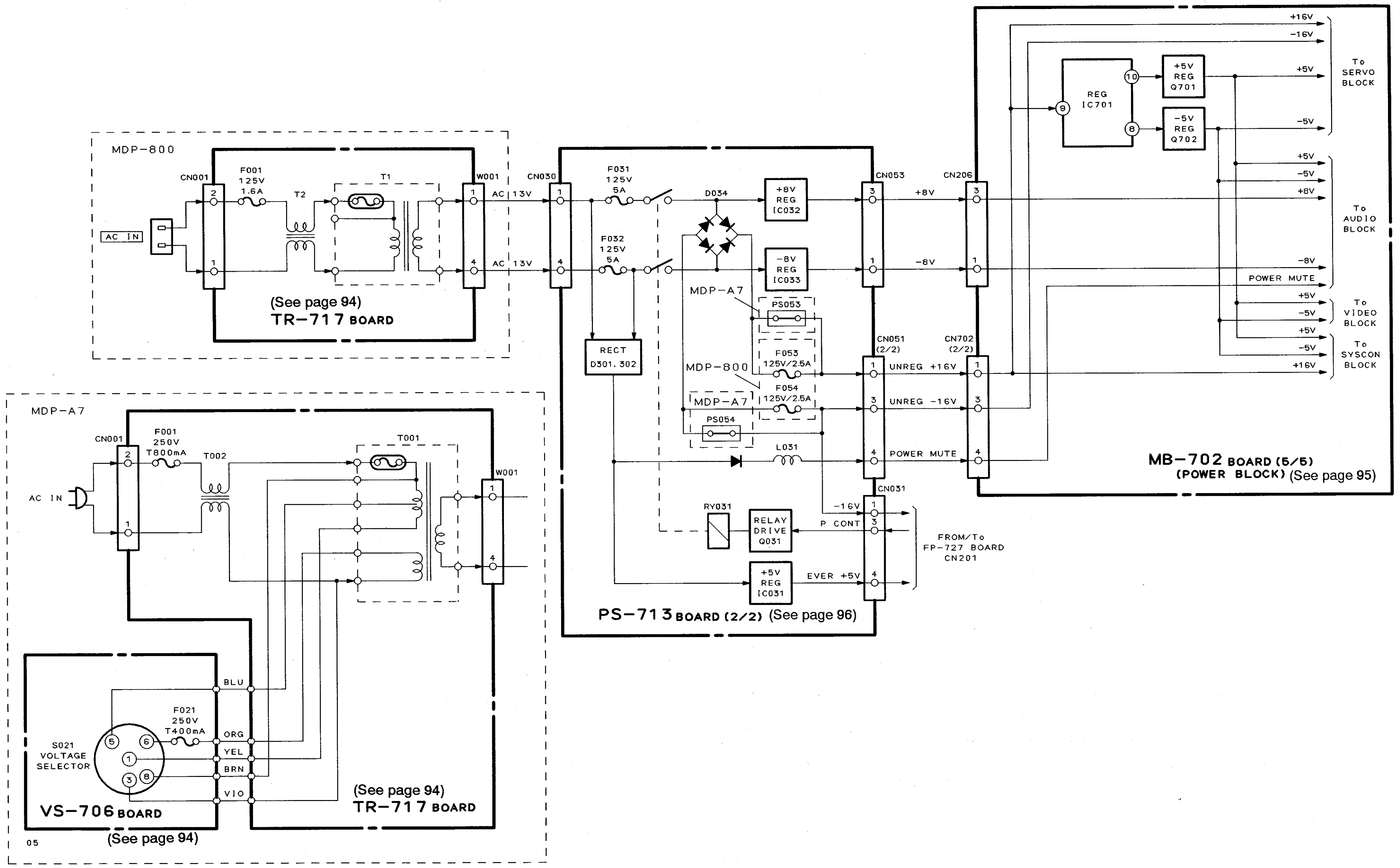
3-6. AUDIO BLOCK DIAGRAM


DIGITAL SIGNAL PROCESSOR IC208
EFM
FT SENSE
TCNT
FOK
RF (A)
FROM SERVO BLOCK
24 RF
75 SE
76 CN
80 MIRR
1 FOK
D OUT 60
DAT 77
XLT 78
CLOCK 79
LOCK 6
SQSO 66
SCOR 65
SENS 68
MDP 4
XTA 53
LRCK 52
SQCK
MUTG
DSP LT
DSP CK
SV DSP RST
67 SQCK
68 MUTE
72 XLAT
74 CLK
70 XRST
71 DATA
IC211 CD SPINDLE ERROR AMP
FROM SYSCON BLOCK
D+ 5V
IC201
OPTICAL DIGITAL OUT
FT DATA
FT XLT
SET CK
To SERVO BLOCK
LOCK
SUBQ
SCOR
SENSE
CD ERROR
To SYSCON BLOCK
AFM DEMOD CX NOISE REDUCTION A/D CONV IC203
IC222
AMP IC223
10 LRCK
ANLS 3
AMP Q203, 204
B.P.F FL208
BUFFER Q201
BUFFER Q202
23 L
24 R
14 CX
15 RST
CX
LINE SELECT IC206
6 DIF
16
2 LRCK
4 ANLS
7 RST
9 SD
10 SCK
11 DFOLT
DATA 13
LRCK 15
BCK 14
DIGITAL FILTER IC204
15 INV0
14 INV1
13 128FS
9 DATA
10 LRCK
8 BCK
1 INT
3 ATT
4 SHIFT
5 LATCH
DL 20
DR 21
LRCK 22
BCK 19
MRCK 17
FLGL 23
FLGR 24
D210
D/A CONV IC214
6 DL
5 DR
4 LRCK
7 BCK
9 512FS
3 INIT
L1 (−) 25
L2 (+) 24
L1 (+) 27
L2 (−) 23
R1 (−) 18
R2 (+) 19
R1 (+) 16
R2 (−) 20
12
11
X201 22.5MHz
AMP IC207
AMP IC209
AMP IC212
AMP IC213
MUTE Q213
MUTE Q214
+8V
ON
OFF
S201 ATTENUATOR
LINE AMP IC202
IC205
IC202
IC205
MUTE Q207
MUTE Q208
MUTE Q209
MUTE Q210
J201
L
R
AUDIO
VIDEO
LINE OUT 1
J202
L
R
AUDIO
VIDEO
LINE OUT 2
IC215
SET DATA
SET CK
DSW LT
DF LT
CD/LD CDV
CD/LD CDV SW Q206, 217
HP AMP IC210
IC210
MUTE Q211
MUTE Q212
MUTE Q225
MUTE Q226
CN201
CN551
HP L
HP R
RV551 LEVEL
J551 PHONES
HP-713 BOARD
(See page 92)
MI-703 BOARD
(See page 92)
ECHO AMP IC501
RV501 ECHO LEVEL
IC503
X501
J501 MIC
IC502
RV501 MIC LEVEL
IC502
IC503
CN501
CN203
MIC IN
MIC SIG
LINE MUTE
D202
SW Q215
SW Q205, 218, 221
D213
FROM POWER BLOCK
POWER MUTE
POWER MUTE Q219
FROM MODE CONTROL BLOCK
AU MUTE
AU MUTE Q220
FROM VIDE BLOCK
VIDEO1
VIDEO2
MB-702 BOARD (4/5) (See page 89)
05

3-7. MODE CONTROL BLOCK DIAGRAM

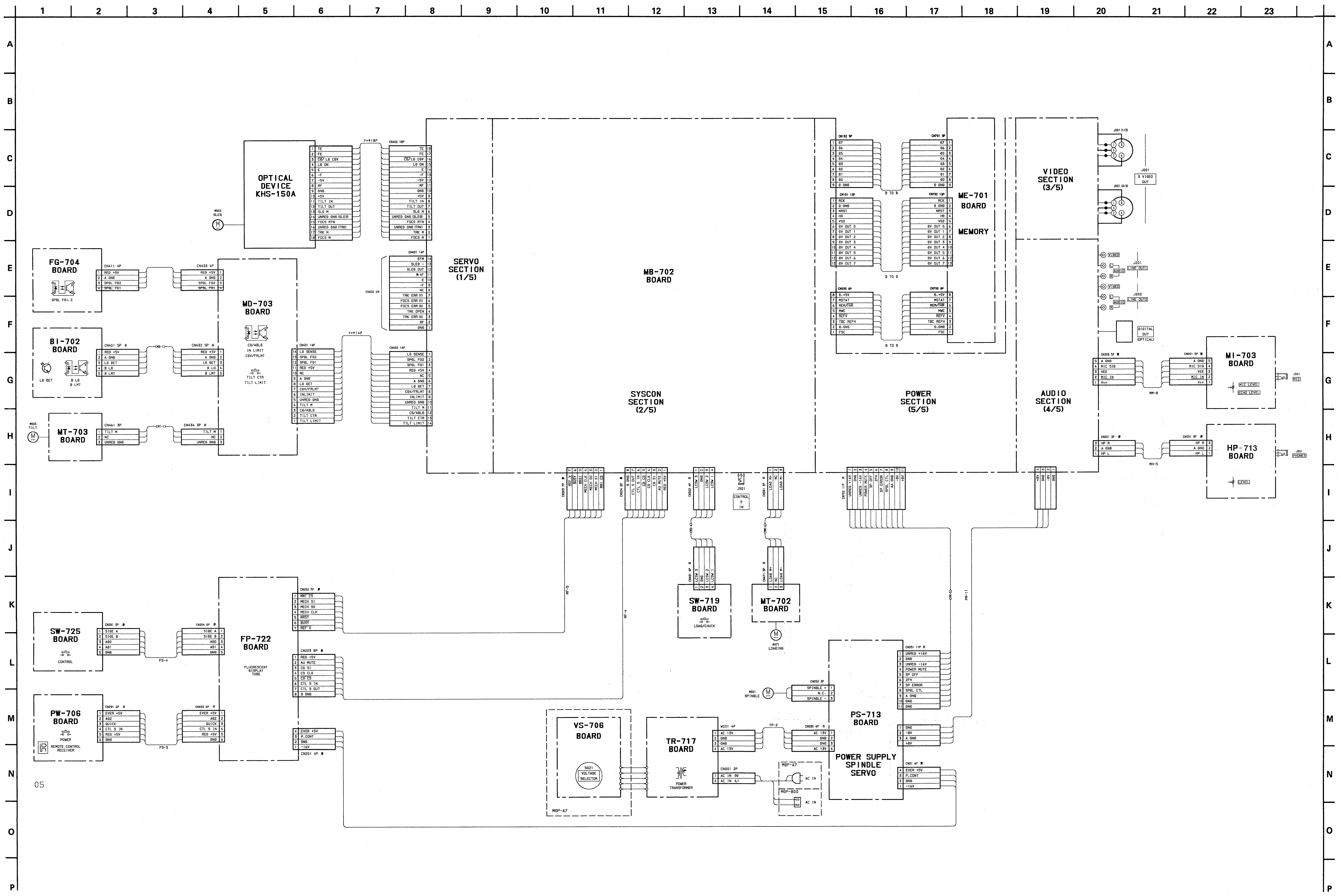

SW-725 BOARD
(See page 106)
D281
SIDE A
D282
SIDE B
S281
S282
S283
S284
S285
SIDE B
ACS/AMS
ACS/AMS
SCAN
SCAN
S286
S287
S288
S289
S290
SIDE A
OPEN/CLOSE
CN281
CN204
SIDE A
SIDE B
AD0
AD1
PW-706 BOARD
(See page 106)
S292
S293
S294
S295
S296
LD QUICK START
FL DISPLAY
CAV STILL MODE
PICTURE CALL
POWER
MDP-800
REG +5V
D293 D293
(POWER)
MDP-A7
SWITCH Q292
EVER +5V
REG +5V
D292
D293
STANDBY/POWER ON
EVER +5V
REMOTE CONTROL RECEIVER IC291
DRIVER Q293
(LD QUICK START)
D294
LED DRIVE Q294
(DIGITAL MEMORY)
D295
LED DRIVE Q295
(PICTURE CALL)
D296
LED DRIVE Q296
CN291
CN205
AD2
CTL S
QUICK
DIGITAL MEM
PICTURE CALL
MODE CONTROL IC201
LED DRIVE Q201
LED DRIVE Q202
SIDE A
SIDE B
AD0
AD1
S201
MC +5V
RESET SW IC202
RST
AD2
X202 8MHz
QUICK
DIGITAL MEM
PICTURE CALL
ND201 FLUORESCENT DISPLAY TUBE
F(-)
G1-G7
P1-P23
F(+)
DC/AC CONV T201 Q203, 204
-16V
G1 | G7
P1 | P23
-30V
P CON
MMI CS
MMI CS
BUSY
MECH SO
MECH SI
MECH CLK
MRST
REF V
AU MUTE
CG SI
CG CLK
CG CS
CTL S IN
DRIVER Q209
CN201
P CON
To PS-713 BOARD CN031
CN202
FROM/To MB-702 BOARD CN503
CN203
AU MUTE
CG CI
CG CLK
CG CS
CTL S IN
CTL S OUT
FROM/To MB-702 BOARD CN504
FP-722 BOARD (See page 107)
05

3-8. POWER SUPPLY BLOCK DIAGRAM


MDP-800
CN001
AC IN
F001 125V 1.6A
T2
T1
(See page 94)
TR-717 BOARD
W001
AC 13V
AC 13V
CN030
F031 125V 5A
F032 125V 5A
D034
+8V REG IC032
-8V REG IC033
MDP-A7
PS053
RECT D301, 302
MDP-800
F053 125V/2.5A
F054 125V/2.5A
MDP-A7
PS054
L031
RY031
RELAY DRIVE Q031
+5V REG IC031
CN053
+8V
-8V
CN051 (2/2)
UNREG +16V
UNREG -16V
POWER MUTE
CN031
-16V
P CONT
EVER +5V
FROM/To FP-727 BOARD CN201
PS-713 BOARD (2/2) (See page 96)
CN206
CN702 (2/2)
REG IC701
+5V REG Q701
-5V REG Q702
+16V
-16V
+5V
-5V
+5V
-5V
+8V
-8V
POWER MUTE
+5V
-5V
+5V
-5V
+16V
To SERVO BLOCK
To AUDIO BLOCK
To VIDEO BLOCK
To SYSCON BLOCK
MB-702 BOARD (5/5) (POWER BLOCK) (See page 95)
MDP-A7
CN001
AC IN
F001 250V T800mA
T002
T001
W001
BLU
F021 250V T400mA
ORG
YEL
BRN
VIO
S021 VOLTAGE SELECTOR
VS-706 BOARD
(See page 94)
(See page 94)
TR-717 BOARD
05

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


OPTICAL DEVICE KHS-150A
M902 SLED
FG-704 BOARD
SPDL FG1.2
BI-702 BOARD
LD DET
B LD B LMT
MT-703 BOARD
M903 TILT
MD-703 BOARD
CS/ABLG IN LIMIT CGV/FRLMT
TILT CTR TILT LIMIT
SERVO SECTION (1/5)
MB-702 BOARD
SYSCON SECTION (2/5)
POWER SECTION (5/5)
ME-701 BOARD
MEMORY
VIDEO SECTION (3/5)
AUDIO SECTION (4/5)
S VIDEO OUT
VIDEO
AUDIO
LINE OUT
DIGITAL OUT (OPTICAL)
MI-703 BOARD
MIC LEVEL
ECHO LEVEL
HP-713 BOARD
LEVEL
PHONES
SW-725 BOARD
CONTROL
FS-4
PW-706 BOARD
POWER
REMOTE CONTROL RECEIVER
FS-3
FP-722 BOARD
FLUORESCENT DISPLAY TUBE
J501 CONTROL S IN
SW-719 BOARD
LOAD/CHUCK
MT-702 BOARD
M471 LOADING
M901 SPINDLE
VS-706 BOARD
S021 VOLTAGE SELECTOR
MDP-A7
TR-717 BOARD
POWER TRANSFORMER
TP-2
MDP-A7
MDP-800
AC IN
PS-713 BOARD
POWER SUPPLY SPINDLE SERVO
MF-5
MF-4
PM-11
05

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○—— : indicates a lead wire mounted on the component side.
- •—— : indicates a lead wire mounted on the printed side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.*

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- ━━ : B + Line.*
- ━ ━ : B − Line.*
- Voltages are dc between measurement points and ground unless otherwise noted.*
- Readings are taken with a color-bar signal playback.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.
- ⇨ : IN/OUT direction of B line (+ , −).*
- Circled numbers refer to waveforms.*

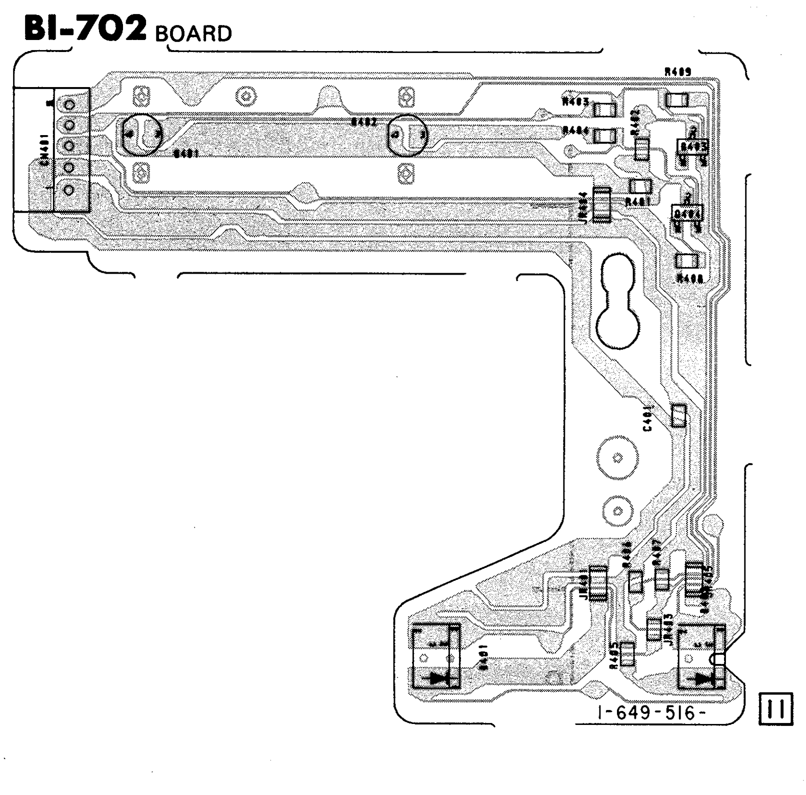
When indicating parts by reference number, please include the board name.

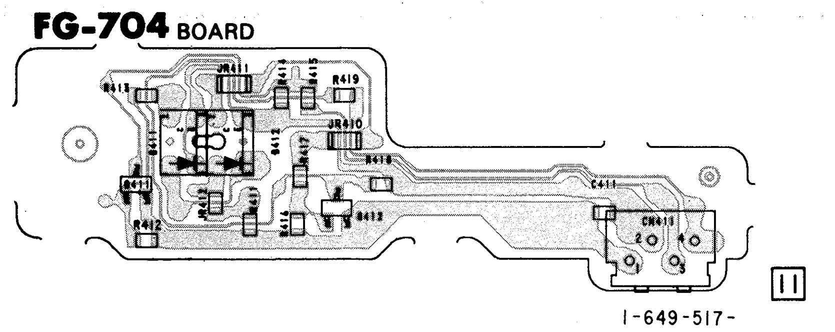
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

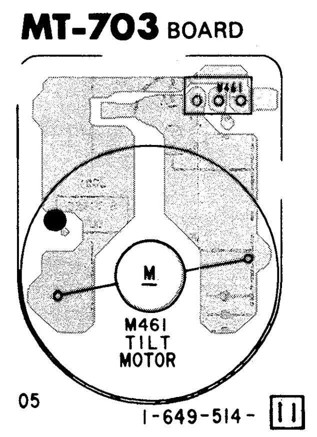
- * : indicated by the color red.

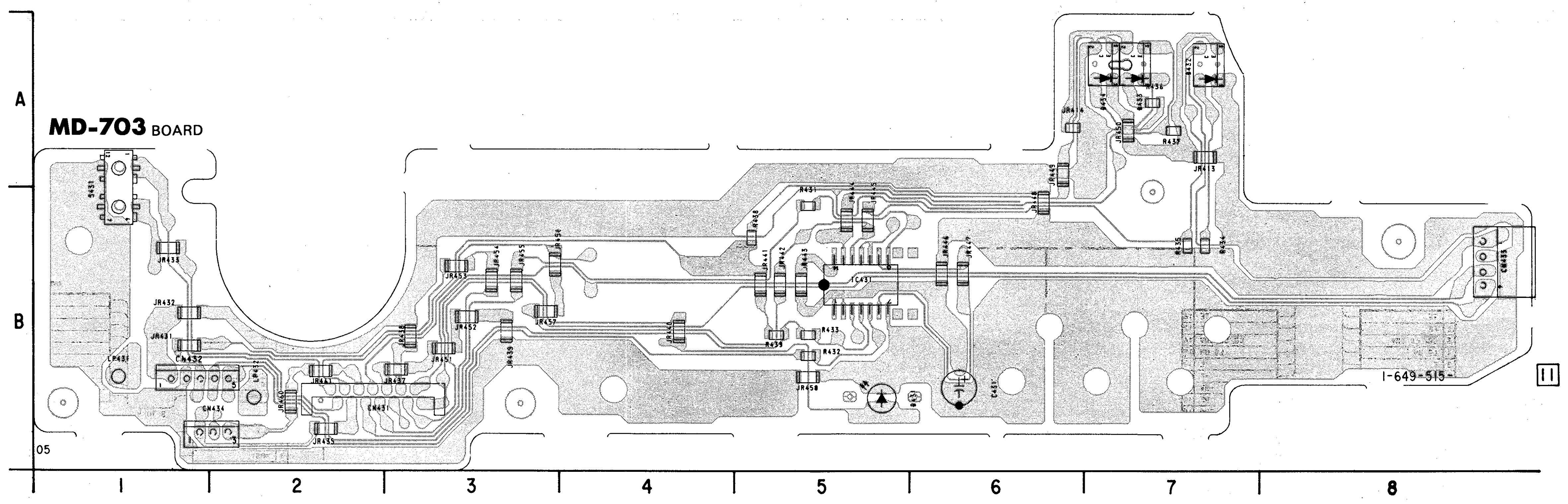
MB-702 (RF AMPLIFIER, SERVO), BI-702 (LD SIDE B, LIMIT DETECTION), FG-704 (SPINDLE FG), MD-703 (MECHANISM OPERATION DETECTION), MT-703 (TILT MOTOR) SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

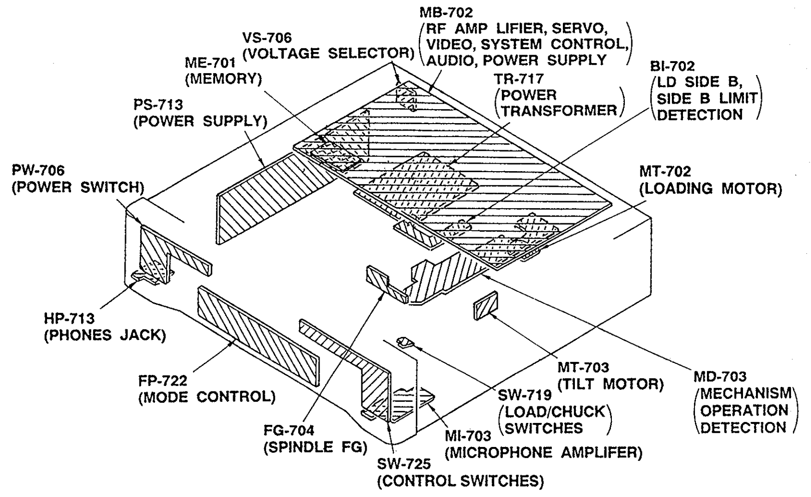
– Ref. No.: MB-702 Board; 1,000 series, BI-702, FG-704, MD-703 and MT-703 Boards; 2,000 series –


BI-702 BOARD
1-649-516-
11

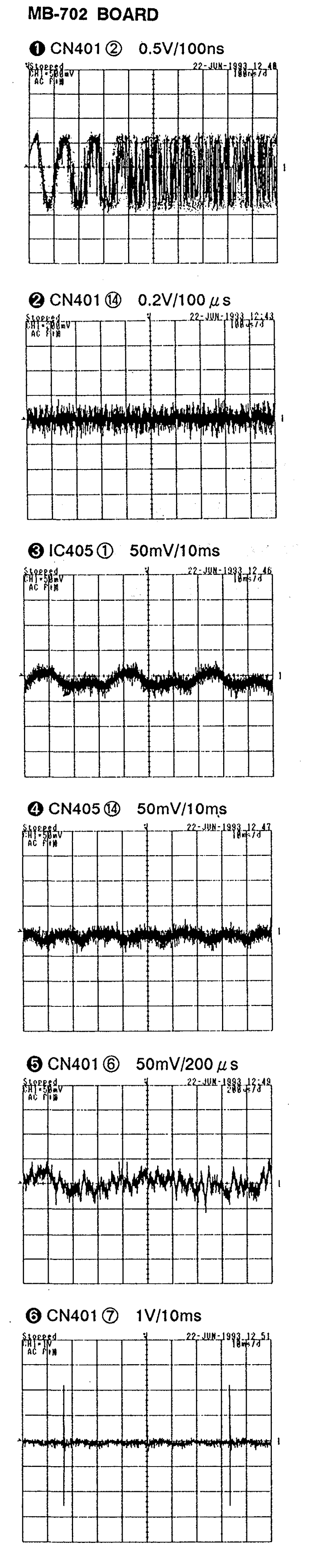

FG-704 BOARD
1-649-517-
11


MT-703 BOARD
M461
TILT
MOTOR
05
1-649-514-
11


MD-703 BOARD
A
B
05
1-649-515-
11
1
2
3
4
5
6
7
8


MB-702
(RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY)
VS-706
(VOLTAGE SELECTOR)
ME-701
(MEMORY)
PS-713
(POWER SUPPLY)
TR-717
(POWER TRANSFORMER)
BI-702
(LD SIDE B, SIDE B LIMIT DETECTION)
PW-706
(POWER SWITCH)
MT-702
(LOADING MOTOR)
HP-713
(PHONES JACK)
FP-722
(MODE CONTROL)
FG-704
(SPINDLE FG)
SW-725
(CONTROL SWITCHES)
MI-703
(MICROPHONE AMPLIFER)
SW-719
(LOAD/CHUCK SWITCHES)
MT-703
(TILT MOTOR)
MD-703
(MECHANISM OPERATION DETECTION)

MB-702 BOARD (1/5)
IC401
SERVO
IC405
TILT ERROR AMP ADD
IC406
TRACKING COIL/FOCUS COIL DRIVE AMP
IC403
SELECT SWITCH
IC404
SELECT SWITCH
IC402
TILT/SLED DRIVE AMP
IC409
PHASE AMP
IC410
RF AMP
IC407
AMP
CN401
CHECK PIN
CN402
CN1
OPTICAL DEVICE
KHS-150A
TRACKING COIL
FOCUS COIL
M902
SLED
BI-702 BORAD
FG-704 BORAD
MD-703 BORAD
IC431
MT-703 BOARD
M903
TILT
TO VIDEO SECTION
(See page 69)
TO AUDIO SECTION
(See page 89)
TO POWER SECTION
(See page 96)
TO AUDIO SECTION
(See page 89)
TO SYSCON SECTION
(See page 77)
TO SYSCON SECTION
(See page 76)
05
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
K



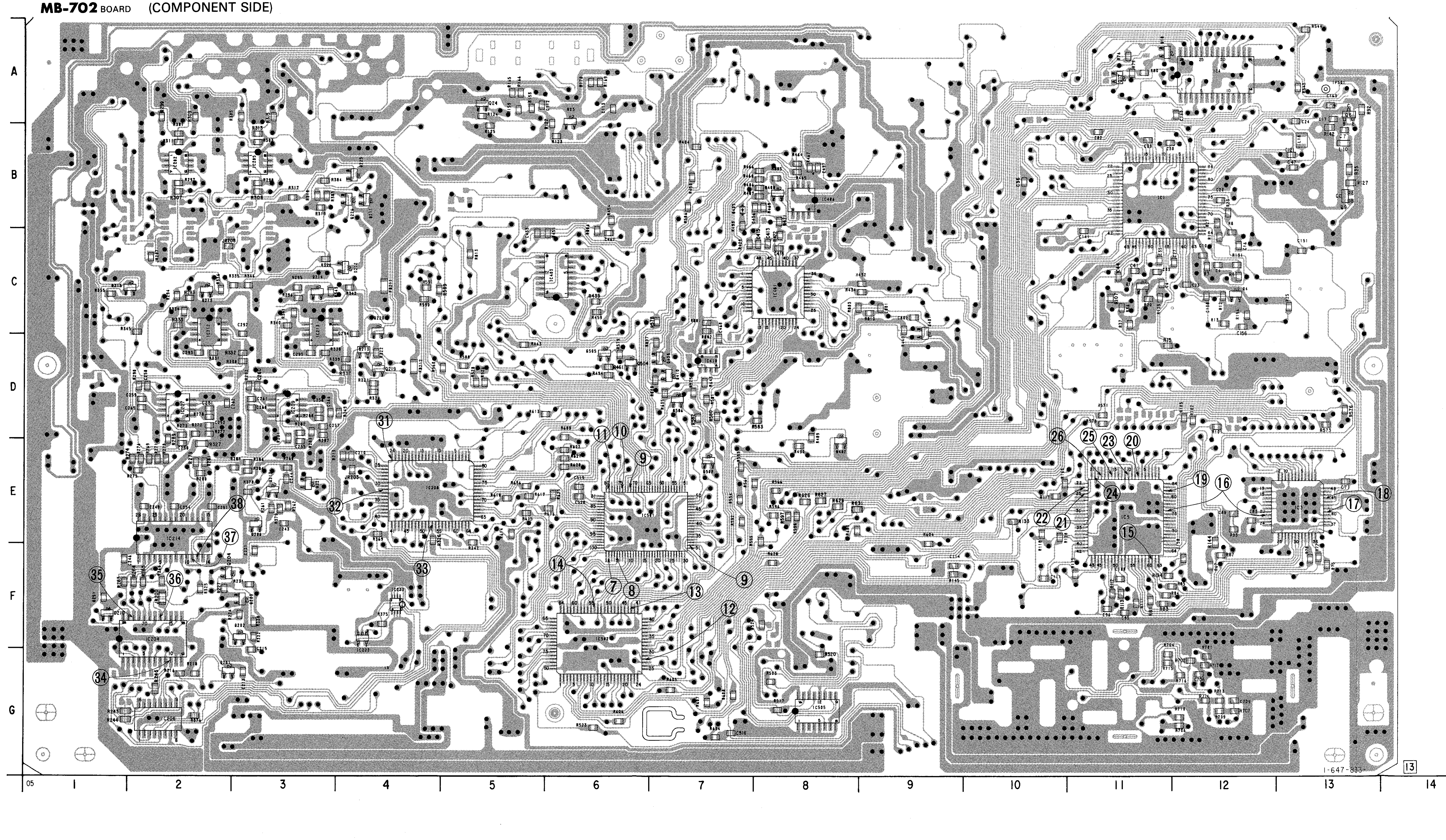
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨»	⇨»»	⇨

SPINDLE PHASE SERVO	➤»
SPINDLE SERVO (SPEED AND PHASE)	➤»»
TRACKING SERVO LD/CD/CDV	➤
SLIDE SERVO LD/CD	ᐳ
FOCUS SERVO LD/CD	➤
SKEW SERVO LD TILT	ᐳ

MB-702 (RF AMPLIFIER, SERVO) PRINTED WIRING BOARD

– Ref. No.: MB-702 Board; 1,000 series –

MB-702 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11
12
13
14
⑨
⑩
⑪
⑫
⑬
⑭
⑮
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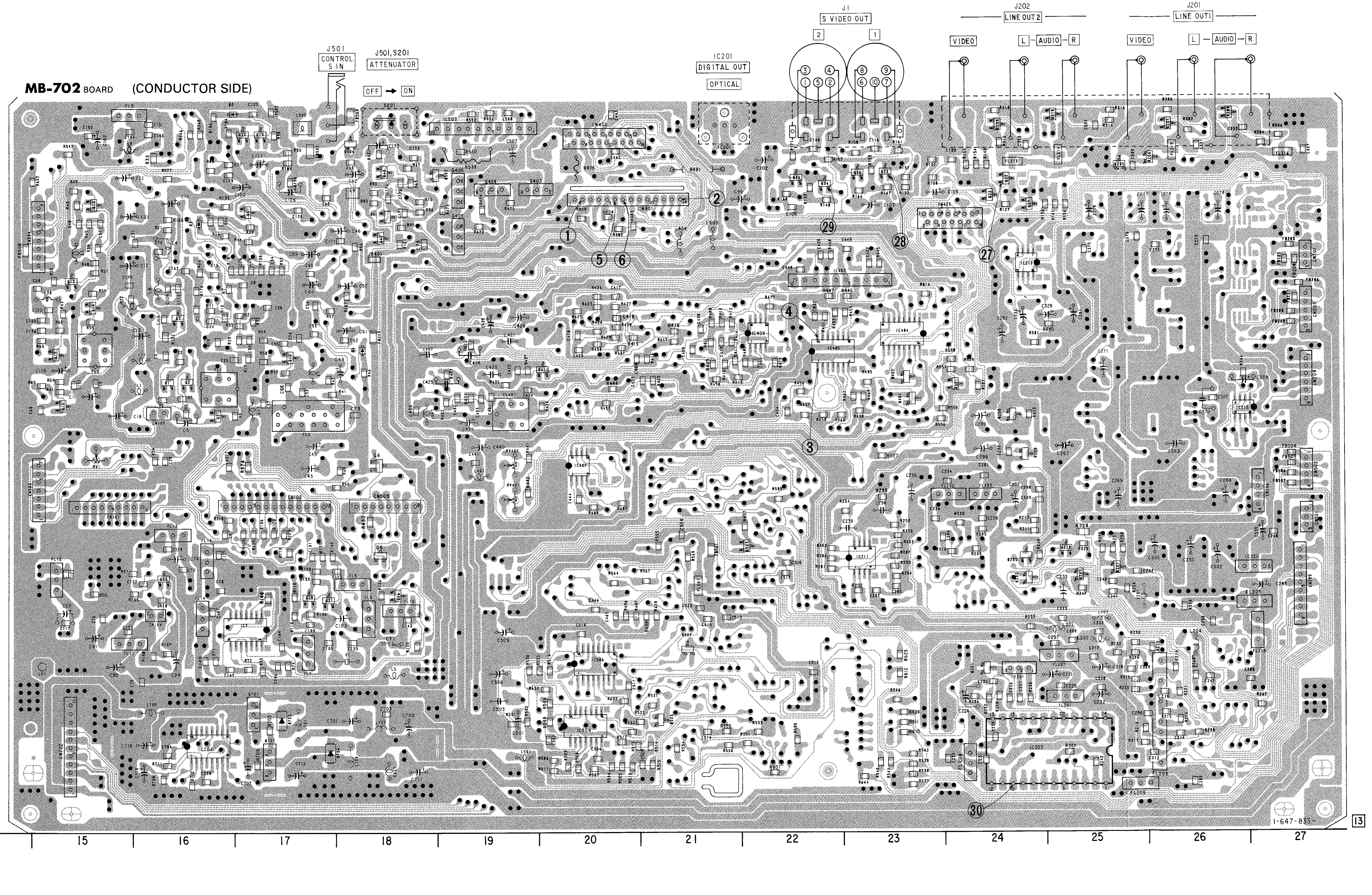
1-647-833-
13

MB-702 BOARD (CONDUCTOR SIDE)


J501
CONTROL S IN
J501, S201
ATTENUATOR
OFF → ON
IC201
DIGITAL OUT
OPTICAL
J1
S VIDEO OUT
2
1
J202
LINE OUT 2
VIDEO
L – AUDIO – R
J201
LINE OUT 1
VIDEO
L – AUDIO – R
①
②
③
④
⑤
⑥
㉗
㉘
㉙
㉚
15
16
17
18
19
20
21
22
23
24
25
26
27
1-647-833-
13

MB-702 BOARD

CN103	D-16
CN104	F-16
CN201	B-27
CN203	C-27
CN204	C-27
CN205	E-27
CN206	D-27
CN401	B-21
CN402	A-20
CN403	B-24
CN501	E-27
CN502	D-27
CN503	D-15
CN504	B-15
CN505	E-18
CN702	G-15
D002	B-16
D003	A-16
D004	C-18
D006	E-18
D201	F-24
D202	E-24
D203	E-25
D205	A-25
D206	A-26
D207	E-25
D208	D-24
D209	D-24
D210	F-1
D213	D-4
D401	C-23
D402	C-23
D405	B-7
D407	E-8
D502	A-18
D503	G-21
D504	A-17
D506	D-7
D507	F-21
D703	G-17
D704	G-17
IC001	B-11
IC003	E-13
IC004	A-12
IC005	E-11
IC007	F-17
IC201	A-21
IC202	B-2
IC203	G-24
IC204	F-2
IC205	B-3
IC206	G-2
IC207	D-2
IC208	E-4
IC209	D-3
IC210	B-24
IC211	E-23
IC212	C-2
IC213	C-3
IC214	E-2
IC215	D-26
IC220	E-27
IC222	F-4
IC223	F-4
IC401	C-8
IC402	B-22
IC403	C-6
IC404	C-23
IC405	C-22
IC406	B-8
IC407	D-20
IC409	C-22
IC410	D-7
IC501	E-6
IC502	F-6
IC503	A-19
IC504	G-20
IC505	G-8
IC506	F-20
IC701	G-16

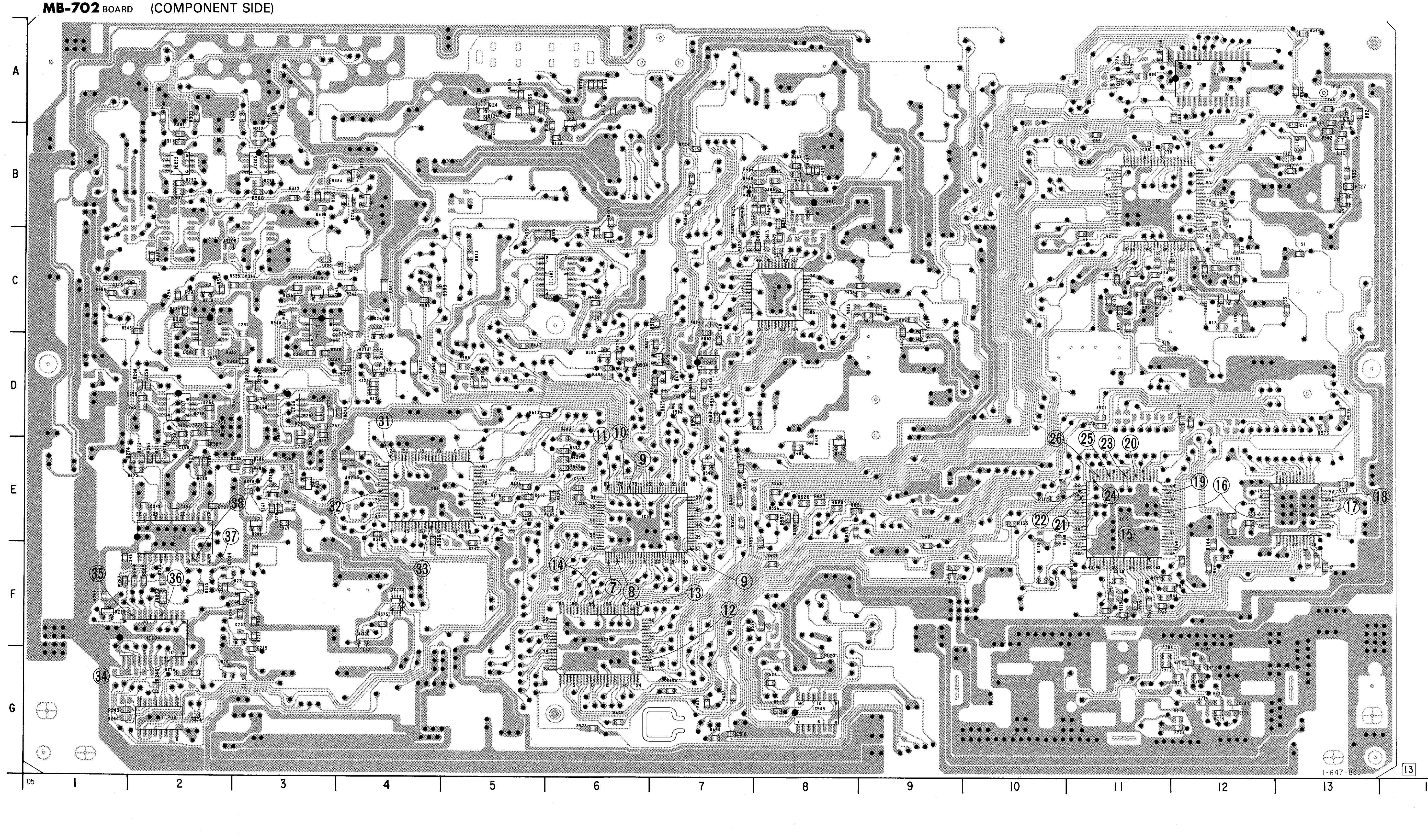
Q001	C-16
Q002	C-16
Q003	D-16
Q004	C-12
Q005	B-17
Q006	A-13
Q007	C-16
Q008	B-18
Q009	B-13
Q010	B-15
Q011	C-11
Q012	B-15
Q013	C-17
Q014	C-15
Q015	C-15
Q016	D-15
Q017	A-11
Q018	A-11
Q019	A-17
Q020	A-17
Q023	A-24
Q024	A-5
Q025	A-6
Q026	E-18
Q027	B-24
Q028	E-17
Q030	A-23
Q031	E-17
Q032	A-24
Q033	A-23
Q034	A-22
Q035	A-22
Q039	E-16
Q040	A-18
Q041	B-18
Q042	B-18
Q201	G-2
Q202	F-3
Q203	F-3
Q204	F-2
Q205	E-24
Q206	E-3
Q207	A-26
Q208	A-26
Q209	A-24
Q210	A-25
Q211	B-4
Q212	C-4
Q213	C-2
Q214	C-3
Q215	C-1
Q217	E-3
Q218	E-25
Q219	D-4
Q220	C-4
Q221	E-3
Q225	B-4
Q226	B-4
Q401	C-9
Q403	A-19
Q404	A-19
Q405	B-19
Q406	A-19
Q408	B-8
Q409	D-7
Q410	D-7
Q411	C-20
Q501	C-24
Q502	E-7
Q503	E-22
Q504	D-6
Q505	D-6
Q701	F-17
Q702	G-17

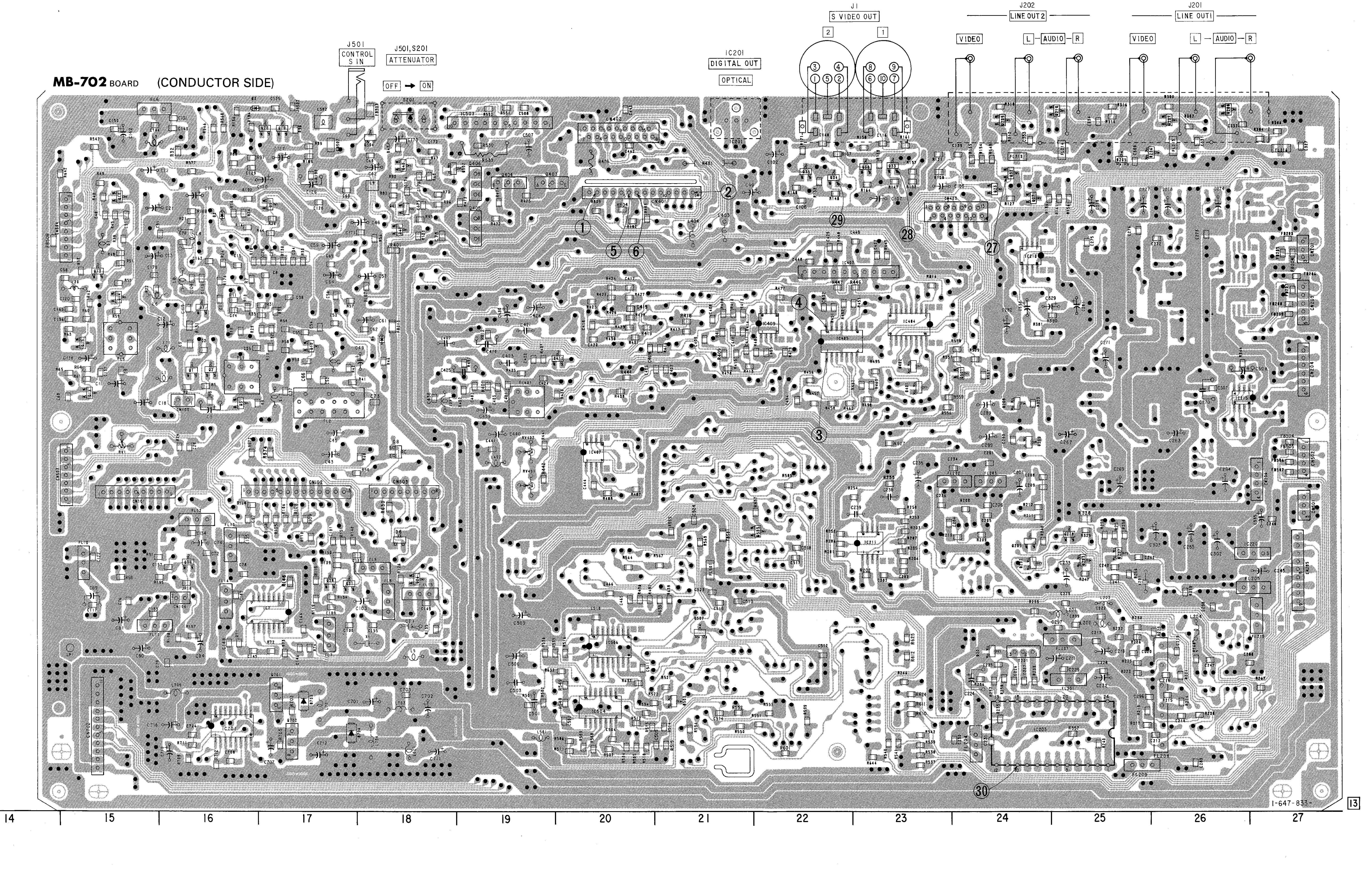
MB-702 (VIDEO), ME-701(MEMORY) PRINTED WIRING BOARD

– Ref. No.: MB-702 and ME-701 Boards; 1,000 series –

MB-702 BOARD

CN103	D-16	Q001	C-16
CN104	F-16	Q002	C-16
CN201	B-27	Q003	D-16
CN203	C-27	Q004	C-12
CN204	C-27	Q005	B-17
CN205	E-27	Q006	A-13
CN206	D-27	Q007	C-16
CN401	B-21	Q008	B-18
CN402	A-20	Q009	B-13
CN403	B-24	Q010	B-15
CN501	E-27	Q011	C-11
CN502	D-27	Q012	B-15
CN503	D-15	Q013	C-17
CN504	B-15	Q014	C-15
CN505	E-18	Q015	C-15
CN702	G-15	Q016	D-15
		Q017	A-11
D002	B-16	Q018	A-11
D003	A-16	Q019	A-17
D004	C-18	Q020	A-17
D006	E-18	Q023	A-24
D201	F-24	Q024	A-5
D202	E-24	Q025	A-6
D203	E-25	Q026	E-18
D205	A-25	Q027	B-24
D206	A-26	Q028	E-17
D207	E-25	Q030	A-23
D208	D-24	Q031	E-17
D209	D-24	Q032	A-24
D210	F-1	Q033	A-23
D213	D-4	Q034	A-22
D401	C-23	Q035	A-22
D402	C-23	Q039	E-16
D405	B-7	Q040	A-18
D407	E-8	Q041	B-18
D502	A-18	Q042	B-18
D503	G-21	Q201	G-2
D504	A-17	Q202	F-3
D506	D-7	Q203	F-3
D507	F-21	Q204	F-2
D703	G-17	Q205	E-24
D704	G-17	Q206	E-3
		Q207	A-26
IC001	B-11	Q208	A-26
IC003	E-13	Q209	A-24
IC004	A-12	Q210	A-25
IC005	E-11	Q211	B-4
IC007	F-17	Q212	C-4
IC201	A-21	Q213	C-2
IC202	B-2	Q214	C-3
IC203	G-24	Q215	C-1
IC204	F-2	Q217	E-3
IC205	B-3	Q218	E-25
IC206	G-2	Q219	D-4
IC207	D-2	Q220	C-4
IC208	E-4	Q221	E-3
IC209	D-3	Q225	B-4
IC210	B-24	Q226	B-4
IC211	E-23	Q401	C-9
IC212	C-2	Q403	A-19
IC213	C-3	Q404	A-19
IC214	E-2	Q405	B-19
IC215	D-26	Q406	A-19
IC220	E-27	Q408	B-8
IC222	F-4	Q409	D-7
IC223	F-4	Q410	D-7
IC401	C-8	Q411	C-20
IC402	B-22	Q501	C-24
IC403	C-6	Q502	E-7
IC404	C-23	Q503	E-22
IC405	C-22	Q504	D-6
IC406	B-8	Q505	D-6
IC407	D-20	Q701	F-17
IC409	C-22	Q702	G-17
IC410	D-7		
IC501	E-6		
IC502	F-6		
IC503	A-19		
IC504	G-20		
IC505	G-8		
IC506	F-20		
IC701	G-16		

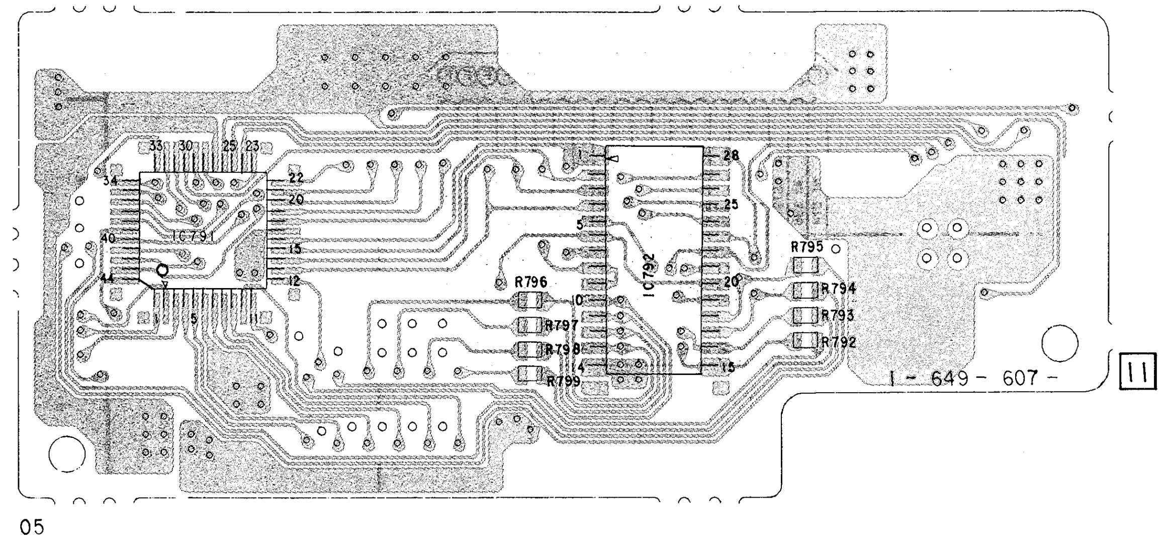

MB-702 BOARD (COMPONENT SIDE)
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11
12
13
14
1-647-833-


MB-702 BOARD (CONDUCTOR SIDE)
J501
CONTROL S IN
J501, S201
ATTENUATOR
OFF → ON
IC201
DIGITAL OUT
OPTICAL
J1
S VIDEO OUT
2
1
J202
LINE OUT 2
VIDEO
L
AUDIO
R
J201
LINE OUT 1
VIDEO
L
AUDIO
R
15
16
17
18
19
20
21
22
23
24
25
26
27
1-647-833-
13

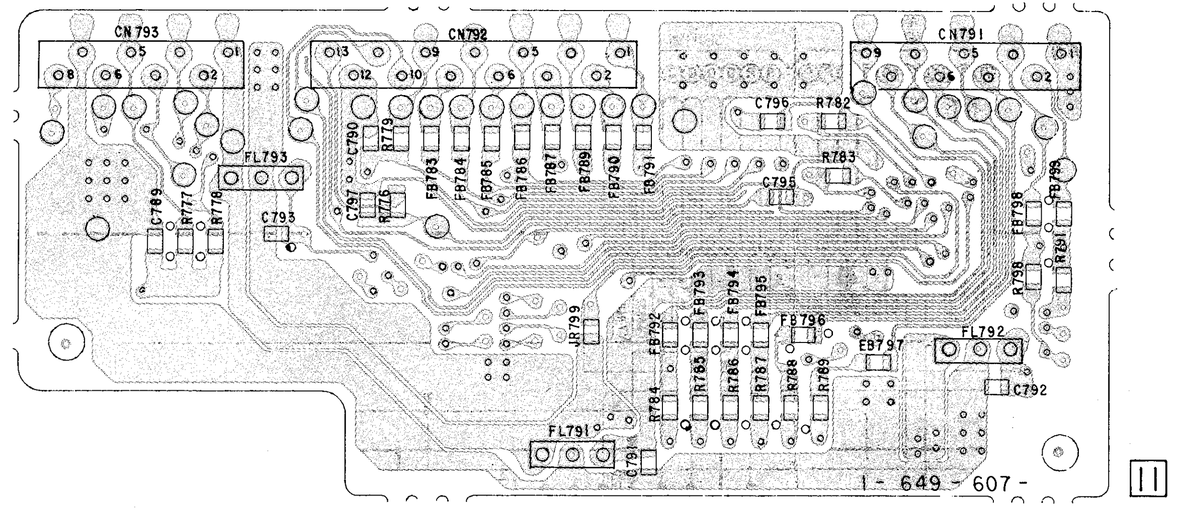
MB-702 (VIDEO), ME-701 (MEMORY) SCHEMATIC DIAGRAM

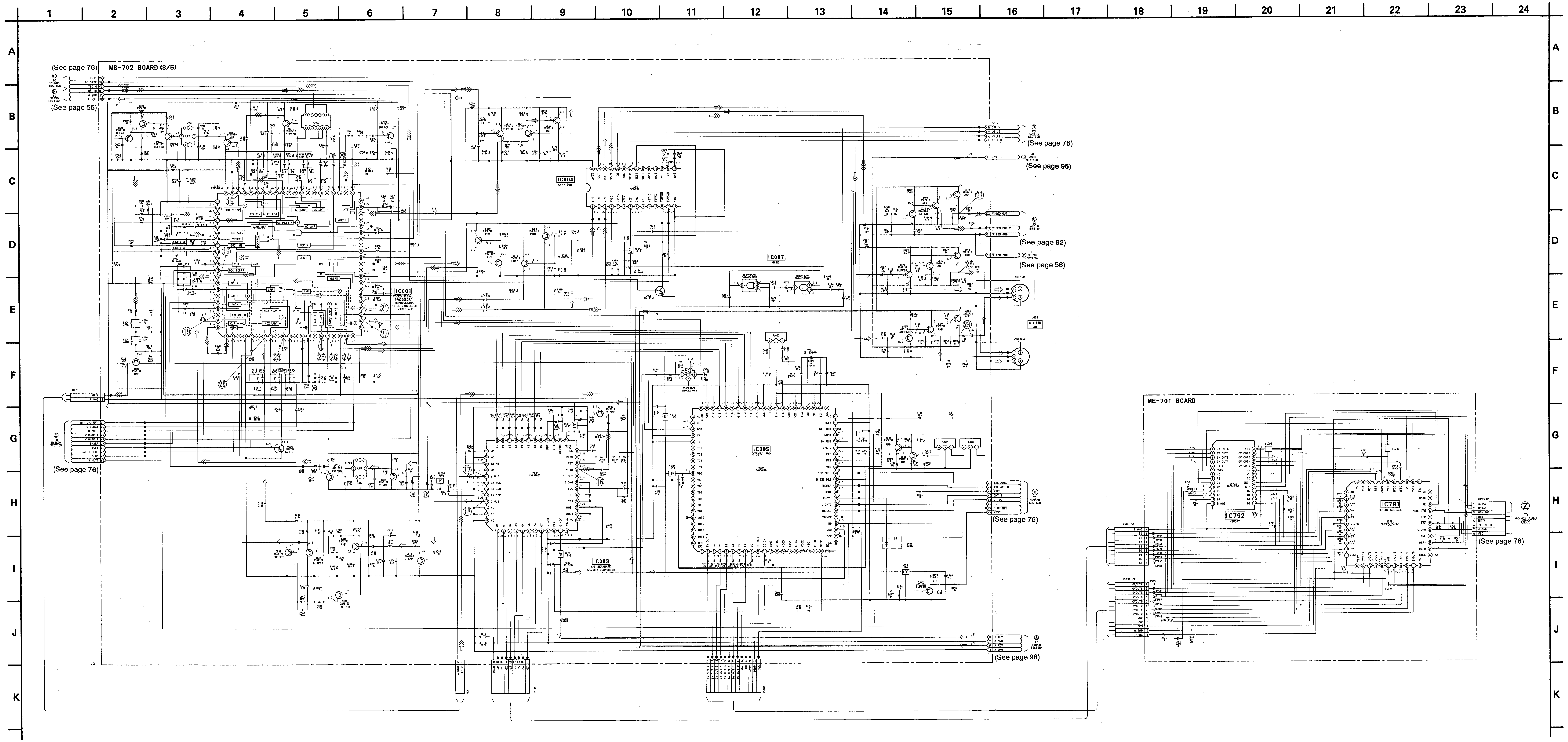
– Ref. No.: MB-702 and ME-701 Boards; 1,000 series –

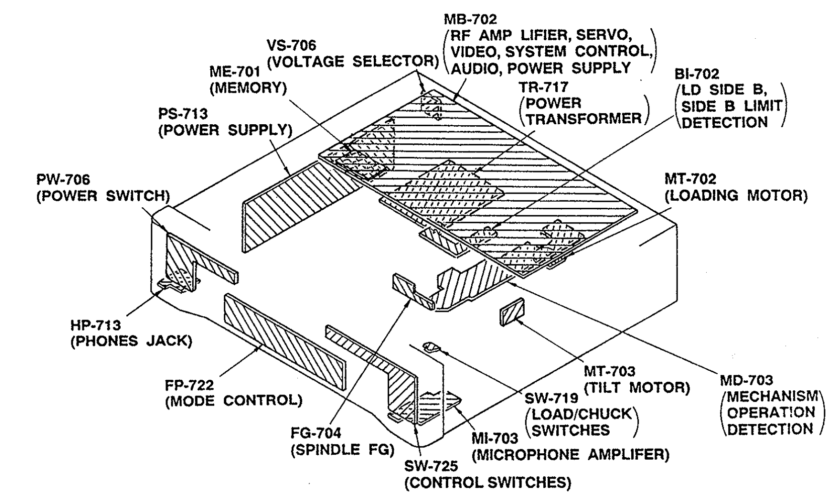
ME-701 BOARD (COMPONENT SIDE)


1 - 649 - 607 -
11
05

ME-701 BOARD (CONDUCTOR SIDE)


CN793
CN792
CN791
FL793
FL792
FL791
1 - 649 - 607 -
11

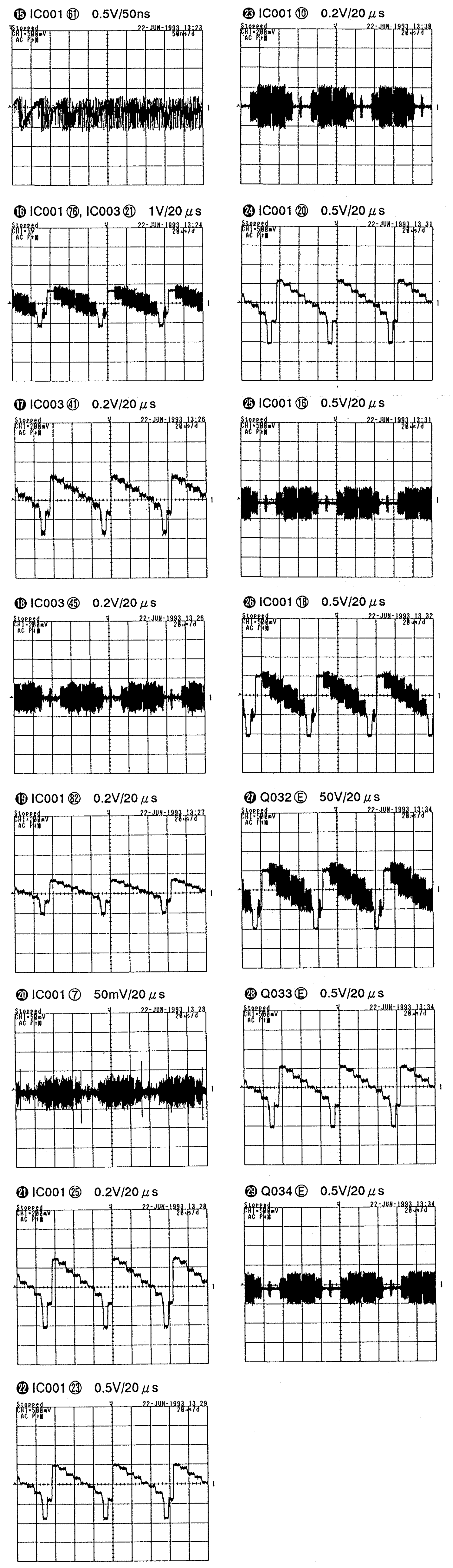

MB-702 BOARD (3/5)
ME-701 BOARD
IC001
IC003
IC004
IC005
IC007
IC791
IC792
(See page 76)
(See page 56)
(See page 96)
(See page 92)
(See page 56)
(See page 76)
(See page 76)
(See page 76)
(See page 96)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A B C D E F G H I J K


MB-702
(RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY)
VS-706
(VOLTAGE SELECTOR)
ME-701
(MEMORY)
PS-713
(POWER SUPPLY)
TR-717
(POWER TRANSFORMER)
BI-702
(LD SIDE B, SIDE B LIMIT DETECTION)
PW-706
(POWER SWITCH)
MT-702
(LOADING MOTOR)
HP-713
(PHONES JACK)
FP-722
(MODE CONTROL)
FG-704
(SPINDLE FG)
SW-725
(CONTROL SWITCHES)
MI-703
(MICROPHONE AMPLIFER)
SW-719
(LOAD/CHUCK SWITCHES)
MT-703
(TILT MOTOR)
MD-703
(MECHANISM OPERATION DETECTION)

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨»	⇨»»	⇨

SPINDLE PHASE SERVO	➤»
SPINDLE SERVO (SPEED AND PHASE)	➤»»
TRACKING SERVO LD/CD/CDV	➤
SLIDE SERVO LD/CD	▷
FOCUS SERVO LD/CD	➤
SKEW SERVO LD TILT	▷

MB-702 BOARD



⑮ IC001 (61) 0.5V/50ns

㉓ IC001 ⑩ 0.2V/20 µs

⑯ IC001 (76), IC003 ㉑ 1V/20 µs

㉔ IC001 ⑳ 0.5V/20 µs

⑰ IC003 (41) 0.2V/20 µs

㉕ IC001 ⑯ 0.5V/20 µs

⑱ IC003 (45) 0.2V/20 µs

㉖ IC001 ⑱ 0.5V/20 µs

⑲ IC001 (82) 0.2V/20 µs

㉗ Q032 Ⓔ 50V/20 µs

⑳ IC001 ⑦ 50mV/20 µs

㉘ Q033 Ⓔ 0.5V/20 µs

㉑ IC001 ㉕ 0.2V/20 µs

㉙ Q034 Ⓔ 0.5V/20 µs

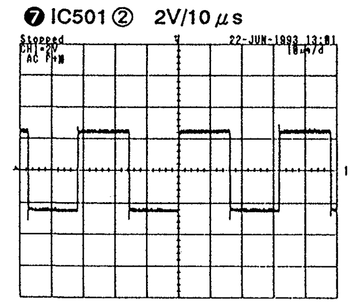
㉒ IC001 ㉓ 0.5V/20 µs

MB-702 (SYSTEM CONTROL), SW-719 (LOAD/CHUCK SWITCHES), MT-702 (LOADING MOTOR), PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

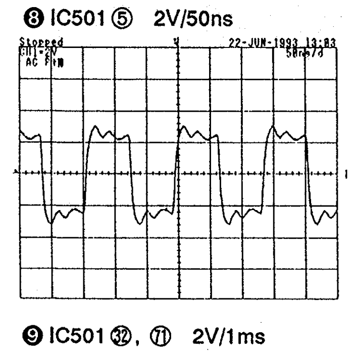
– Ref. No.: MB-702 Board; 1,000 series, MT-702 and SW-719 Boards; 3,000 series –

MB-702 BOARD

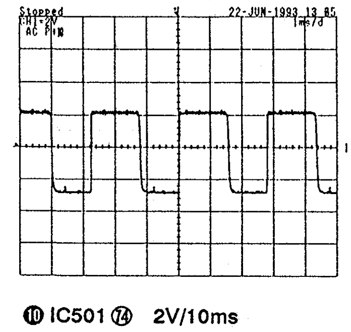
❼ IC501 ② 2V/10 μs



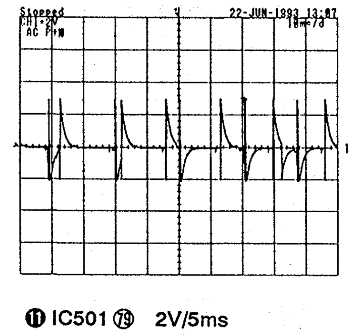
❽ IC501 ⑤ 2V/50ns



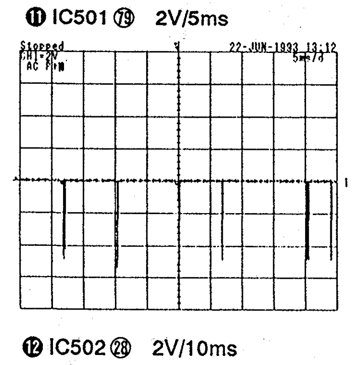
❾ IC501 ㉜, ⑦① 2V/1ms



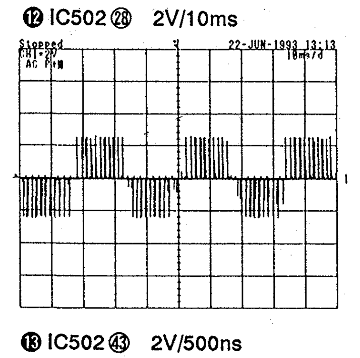
❿ IC501 ⑦④ 2V/10ms



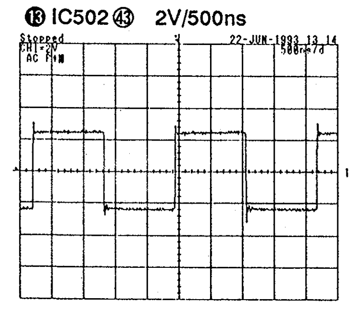
⓫ IC501 ⑦⑨ 2V/5ms



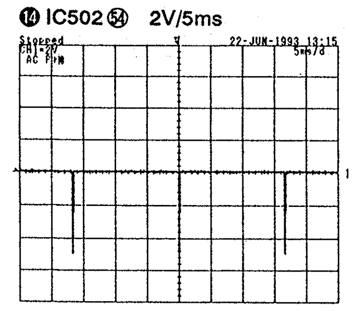
⓬ IC502 ㉘ 2V/10ms

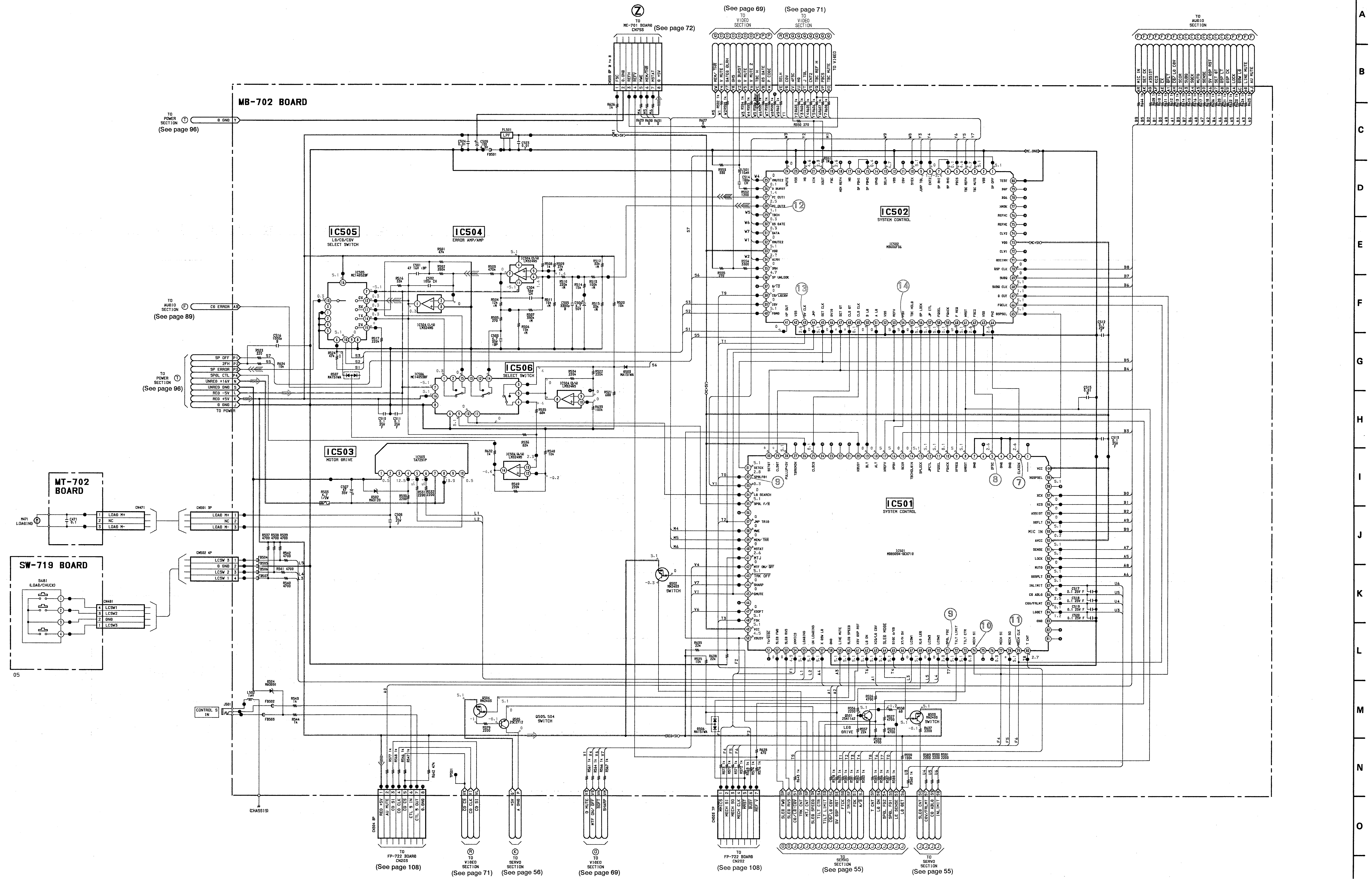


⓭ IC502 ㊸ 2V/500ns

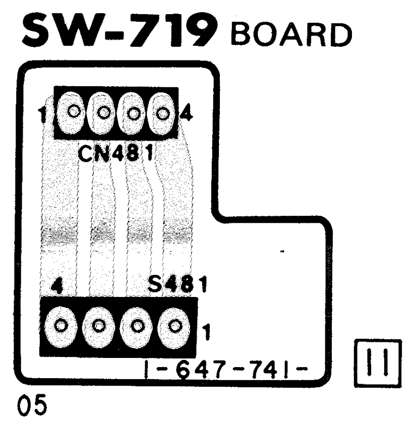


⓮ IC502 ㊴ 2V/5ms

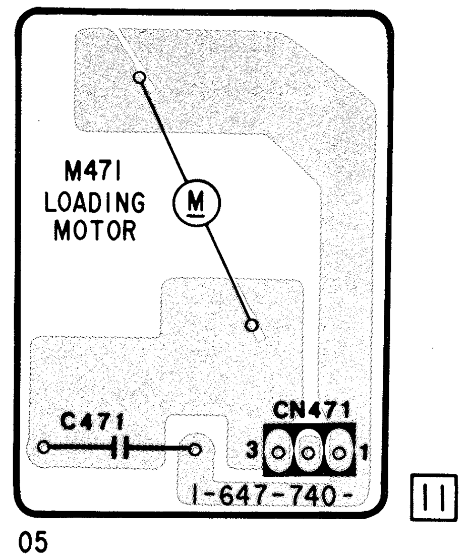


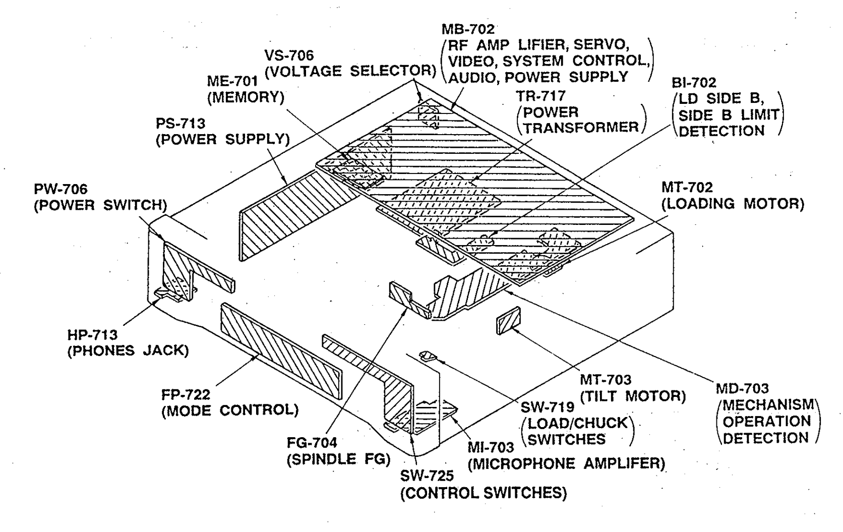

MB-702 BOARD
Ⓩ TO ME-701 BOARD CN703 (See page 72)
(See page 69) TO VIDEO SECTION
(See page 71) TO VIDEO SECTION
TO AUDIO SECTION
TO POWER SECTION Ⓣ (See page 96)
TO AUDIO SECTION Ⓕ (See page 89)
TO POWER SECTION Ⓣ (See page 96)
IC505 L6/C6/CDV SELECT SWITCH
IC504 ERROR AMP/AMP
IC506 SELECT SWITCH
IC503 MOTOR DRIVE
IC502 SYSTEM CONTROL
IC501 SYSTEM CONTROL
MT-702 BOARD
M471 LOADING
CN471
SW-719 BOARD
S481 (LOAD/CHUCK)
CN481
CN501 3P
CN502 4P
LOAD M+
NC
LOAD M-
LCSW1
LCSW2
GND
LCSW3
SP OFF
2FH
SP ERROR
SPDL CTL
UNREG +14V
UNREG GND
REG -5V
REG +5V
6 GND
TO POWER
CD ERROR
CONTROL S IN
Q505, 504 SWITCH
Q502 SWITCH
LED DRIVE
Q501 SWITCH
CHASSIS
05
TO FP-722 BOARD CN203 (See page 108)
Ⓡ TO VIDEO SECTION (See page 71)
Ⓚ TO SERVO SECTION (See page 56)
Ⓓ TO VIDEO SECTION (See page 69)
TO FP-722 BOARD CN202 (See page 108)
TO SERVO SECTION (See page 55)
TO SERVO SECTION (See page 55)

SW-719 BOARD


1
4
CN481
4
S481
1
1-647-741-
11
05

MT-702 BOARD


M471
LOADING
MOTOR
M
C471
CN471
3
1
1-647-740-
11
05

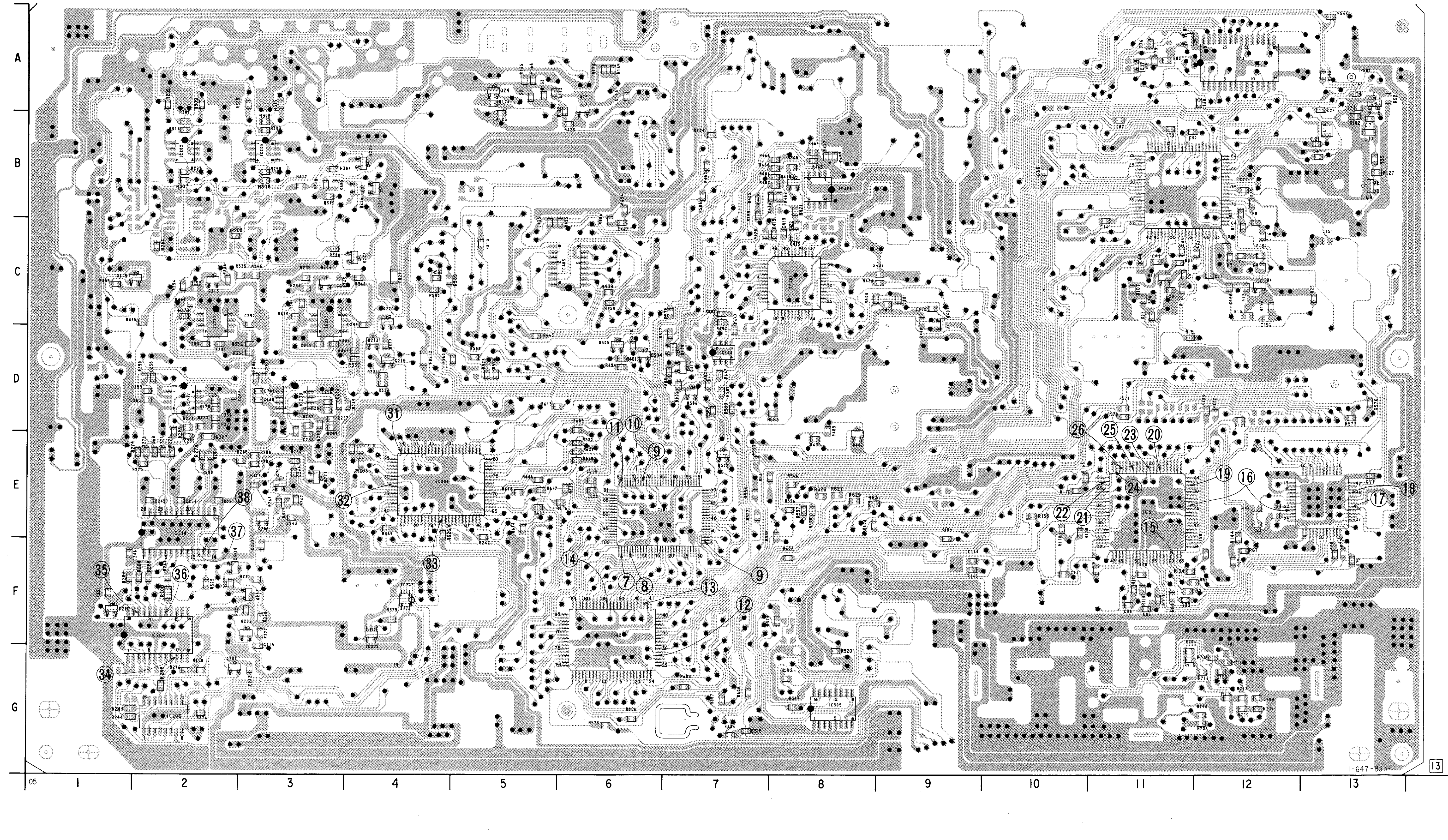

MB-702 (RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY)
VS-706 (VOLTAGE SELECTOR)
ME-701 (MEMORY)
TR-717 (POWER TRANSFORMER)
BI-702 (LD SIDE B, SIDE B LIMIT DETECTION)
PS-713 (POWER SUPPLY)
PW-706 (POWER SWITCH)
MT-702 (LOADING MOTOR)
HP-713 (PHONES JACK)
FP-722 (MODE CONTROL)
MT-703 (TILT MOTOR)
MD-703 (MECHANISM OPERATION DETECTION)
SW-719 (LOAD/CHUCK SWITCHES)
FG-704 (SPINDLE FG)
MI-703 (MICROPHONE AMPLIFER)
SW-725 (CONTROL SWITCHES)

SPINDLE PHASE SERVO	⮞⮞
SPINDLE SERVO (SPEED AND PHASE)	⮞⮞⮞
TRACKING SERVO LD/CD/CDV	⮞
SLIDE SERVO LD/CD	⊳
FOCUS SERVO LD/CD	➤
SKEW SERVO LD TILT	⊳

MB-702 (SYSTEM CONTROL) PRINTED WIRING BOARDS

– Ref. No.: MB-702 Board; 1,000 series –

MB-702 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
05
1
2
3
4
5
6
7
8
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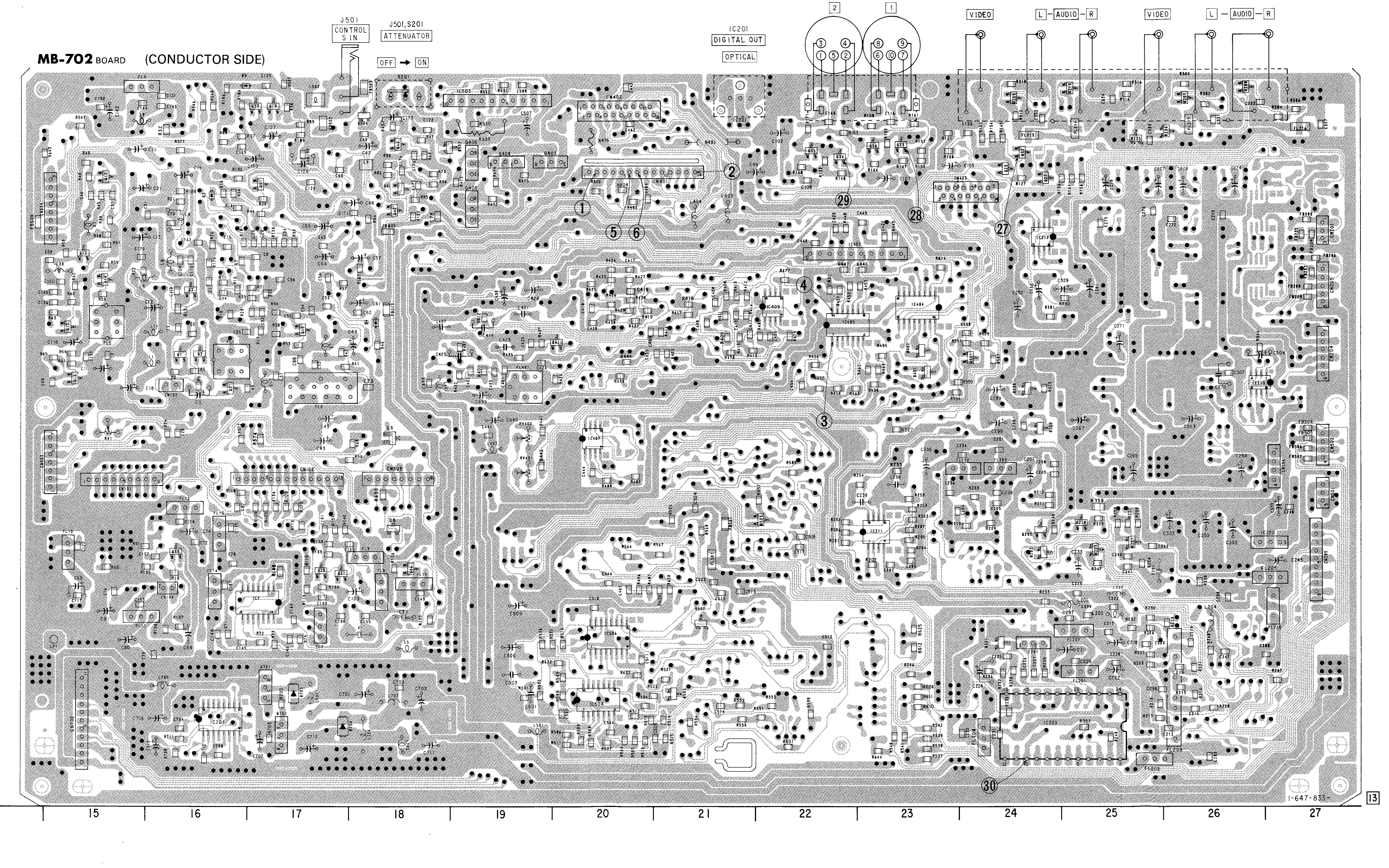
10
11
12
13
14
1-647-833-
13
①–㊳

MB-702 BOARD (CONDUCTOR SIDE)


J501
CONTROL
S IN
J501,S201
ATTENUATOR
OFF → ON
IC201
DIGITAL OUT
OPTICAL
J1
S VIDEO OUT
2
1
J202
LINE OUT2
VIDEO
L
AUDIO
R
J201
LINE OUT1
VIDEO
L
AUDIO
R
15
16
17
18
19
20
21
22
23
24
25
26
27
1-647-833-
13

MB-702 BOARD

CN103	D-16
CN104	F-16
CN201	B-27
CN203	C-27
CN204	C-27
CN205	E-27
CN206	D-27
CN401	B-21
CN402	A-20
CN403	B-24
CN501	E-27
CN502	D-27
CN503	D-15
CN504	B-15
CN505	E-18
CN702	G-15
D002	B-16
D003	A-16
D004	C-18
D006	E-18
D201	F-24
D202	E-24
D203	E-25
D205	A-25
D206	A-26
D207	E-25
D208	D-24
D209	D-24
D210	F-1
D213	D-4
D401	C-23
D402	C-23
D405	B-7
D407	E-8
D502	A-18
D503	G-21
D504	A-17
D506	D-7
D507	F-21
D703	G-17
D704	G-17
IC001	B-11
IC003	E-13
IC004	A-12
IC005	E-11
IC007	F-17
IC201	A-21
IC202	B-2
IC203	G-24
IC204	F-2
IC205	B-3
IC206	G-2
IC207	D-2
IC208	E-4
IC209	D-3
IC210	B-24
IC211	E-23
IC212	C-2
IC213	C-3
IC214	E-2
IC215	D-26
IC220	E-27
IC222	F-4
IC223	F-4
IC401	C-8
IC402	B-22
IC403	C-6
IC404	C-23
IC405	C-22
IC406	B-8
IC407	D-20
IC409	C-22
IC410	D-7
IC501	E-6
IC502	F-6
IC503	A-19
IC504	G-20
IC505	G-8
IC506	F-20
IC701	G-16

Q001	C-16
Q002	C-16
Q003	D-16
Q004	C-12
Q005	B-17
Q006	A-13
Q007	C-16
Q008	B-18
Q009	B-13
Q010	B-15
Q011	C-11
Q012	B-15
Q013	C-17
Q014	C-15
Q015	C-15
Q016	D-15
Q017	A-11
Q018	A-11
Q019	A-17
Q020	A-17
Q023	A-24
Q024	A-5
Q025	A-6
Q026	E-18
Q027	B-24
Q028	E-17
Q030	A-23
Q031	E-17
Q032	A-24
Q033	A-23
Q034	A-22
Q035	A-22
Q039	E-16
Q040	A-18
Q041	B-18
Q042	B-18
Q201	G-2
Q202	F-3
Q203	F-3
Q204	F-2
Q205	E-24
Q206	E-3
Q207	A-26
Q208	A-26
Q209	A-24
Q210	A-25
Q211	B-4
Q212	C-4
Q213	C-2
Q214	C-3
Q215	C-1
Q217	E-3
Q218	E-25
Q219	D-4
Q220	C-4
Q221	E-3
Q225	B-4
Q226	B-4
Q401	C-9
Q403	A-19
Q404	A-19
Q405	B-19
Q406	A-19
Q408	B-8
Q409	D-7
Q410	D-7
Q411	C-20
Q501	C-24
Q502	E-7
Q503	E-22
Q504	D-6
Q505	D-6
Q701	F-17
Q702	G-17

MB-702 (AUDIO) PRINTED WIRING BOARD

– Ref. No.: MB-702 Board; 1,000 series –

MB-702 BOARD

CN103	D-16
CN104	F-16
CN201	B-27
CN203	C-27
CN204	C-27
CN205	E-27
CN206	D-27
CN401	B-21
CN402	A-20
CN403	B-24
CN501	E-27
CN502	D-27
CN503	D-15
CN504	B-15
CN505	E-18
CN702	G-15
D002	B-16
D003	A-16
D004	C-18
D006	E-18
D201	F-24
D202	E-24
D203	E-25
D205	A-25
D206	A-26
D207	E-25
D208	D-24
D209	D-24
D210	F-1
D213	D-4
D401	C-23
D402	C-23
D405	B-7
D407	E-8
D502	A-18
D503	G-21
D504	A-17
D506	D-7
D507	F-21
D703	G-17
D704	G-17
IC001	B-11
IC003	E-13
IC004	A-12
IC005	E-11
IC007	F-17
IC201	A-21
IC202	B-2
IC203	G-24
IC204	F-2
IC205	B-3
IC206	G-2
IC207	D-2
IC208	E-4
IC209	D-3
IC210	B-24
IC211	E-23
IC212	C-2
IC213	C-3
IC214	E-2
IC215	D-26
IC220	E-27
IC222	F-4
IC223	F-4
IC401	C-8
IC402	B-22
IC403	C-6
IC404	C-23
IC405	C-22
IC406	B-8
IC407	D-20
IC409	C-22
IC410	D-7
IC501	E-6
IC502	F-6
IC503	A-19
IC504	G-20
IC505	G-8
IC506	F-20
IC701	G-16
Q001	C-16
Q002	C-16
Q003	D-16
Q004	C-12
Q005	B-17
Q006	A-13
Q007	C-16
Q008	B-18
Q009	B-13
Q010	B-15
Q011	C-11
Q012	B-15
Q013	C-17
Q014	C-15
Q015	C-15
Q016	D-15
Q017	A-11
Q018	A-11
Q019	A-17
Q020	A-17
Q023	A-24
Q024	A-5
Q025	A-6
Q026	E-18
Q027	B-24
Q028	E-17
Q030	A-23
Q031	E-17
Q032	A-24
Q033	A-23
Q034	A-22
Q035	A-22
Q039	E-16
Q040	A-18
Q041	B-18
Q042	B-18
Q201	G-2
Q202	F-3
Q203	F-3
Q204	F-2
Q205	E-24
Q206	E-3
Q207	A-26
Q208	A-26
Q209	A-24
Q210	A-25
Q211	B-4
Q212	C-4
Q213	C-2
Q214	C-3
Q215	C-1
Q217	E-3
Q218	E-25
Q219	D-4
Q220	C-4
Q221	E-3
Q225	B-4
Q226	B-4
Q401	C-9
Q403	A-19
Q404	A-19
Q405	B-19
Q406	A-19
Q408	B-8
Q409	D-7
Q410	D-7
Q411	C-20
Q501	C-24
Q502	E-7
Q503	E-22
Q504	D-6
Q505	D-6
Q701	F-17
Q702	G-17

MB-702 BOARD (COMPONENT SIDE)
MB-702 BOARD (CONDUCTOR SIDE)
J501 CONTROL S IN
J501, S201 ATTENUATOR
OFF → ON
IC201 DIGITAL OUT
OPTICAL
J1 S VIDEO OUT
2
1
J202 LINE OUT 2
J201 LINE OUT 1
VIDEO
L – AUDIO – R
A
B
C
D
E
F
G
05
1
2
3
4
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24
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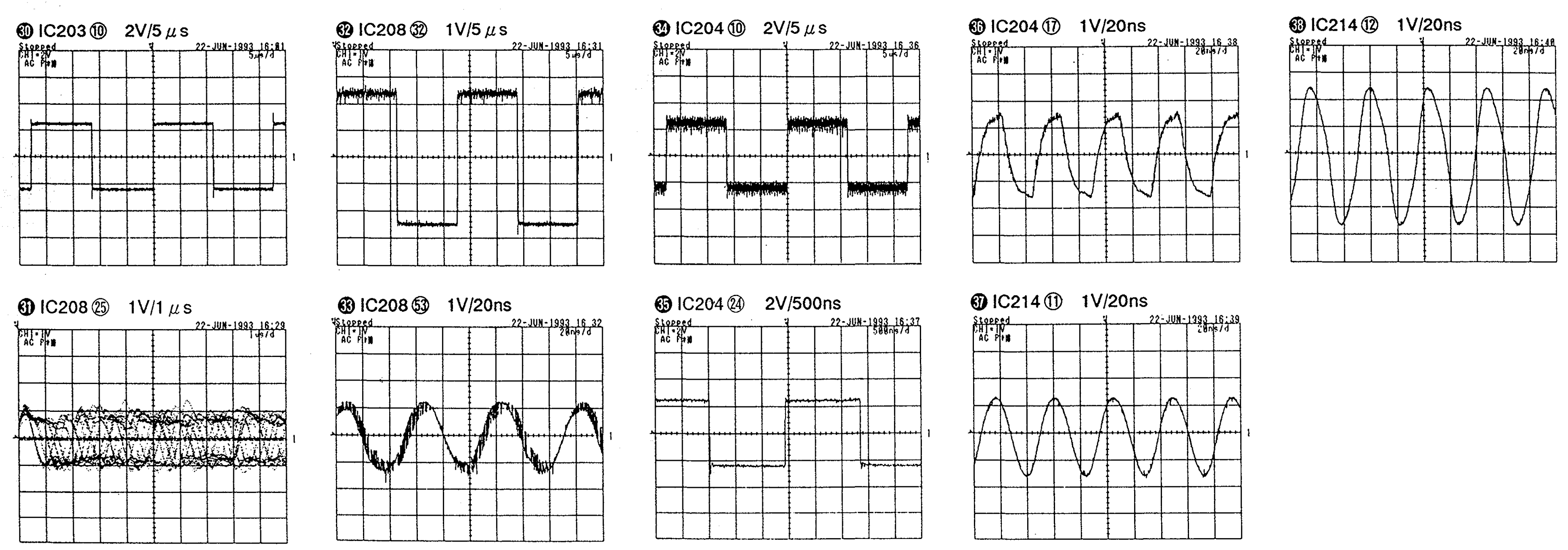
13
1-647-885-
1-647-885-

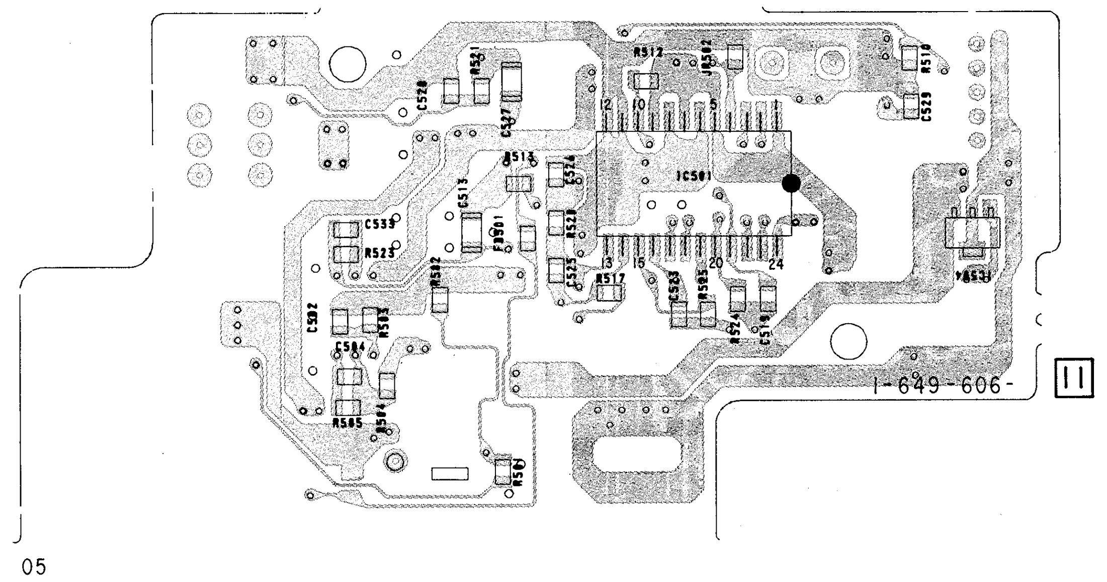
MB-702 (AUDIO), MI-703 (MICROPHONE AMPLIHER), HP-713 (PHONES JACK) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

– Ref. No.: MB-702 Board; 1,000 series, MI-703 Board; 4,000 series, HP-713 Board; 5,000 series –

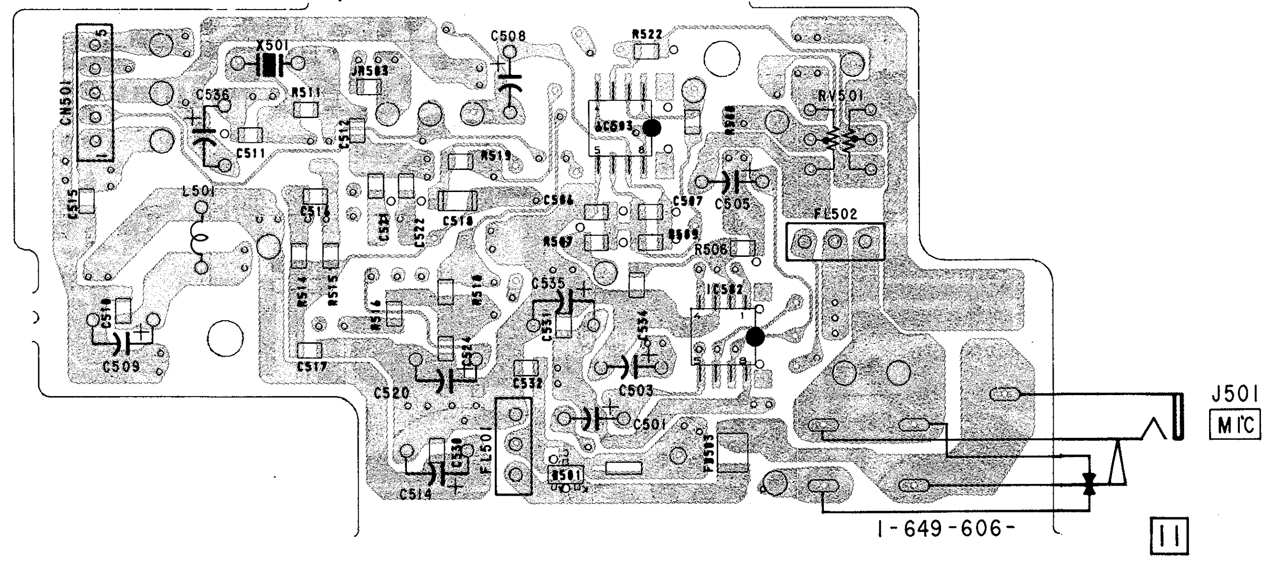
MB-702 BOARD



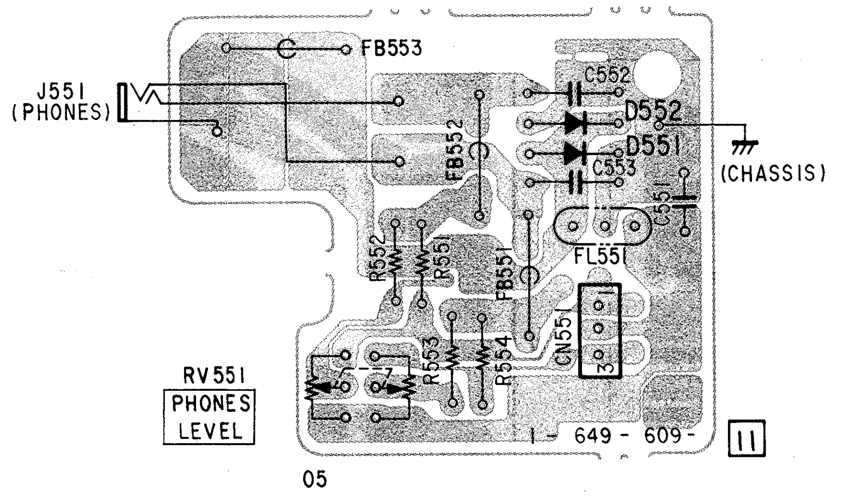
MI-703 BOARD (COMPONENT SIDE)


IC501
1-649-606- 11
05

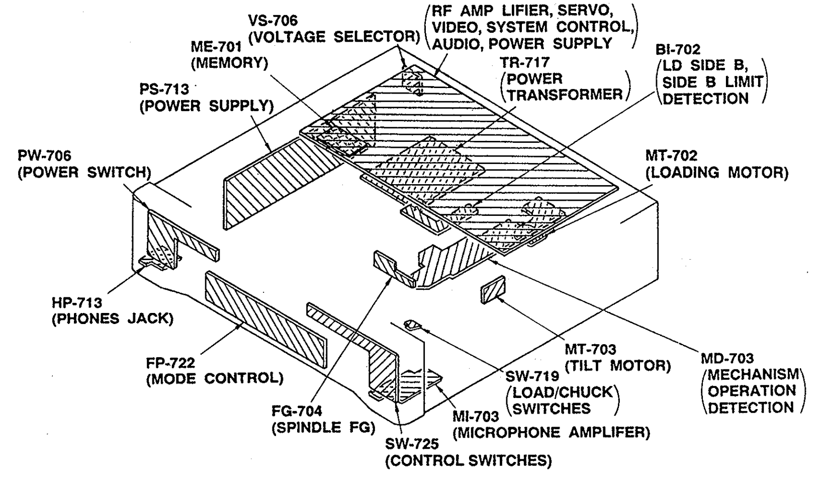
MI-703 BOARD (CONDUCTOR SIDE)


CN501
X501
RV501
FL502
IC503
IC502
FL501
J501
MIC
1-649-606- 11

HP-713 BOARD


J551
(PHONES)
FB553
C552
D552
D551
C553
(CHASSIS)
FB552
FL551
CN551
RV551
PHONES
LEVEL
1- 649 - 609- 11
05

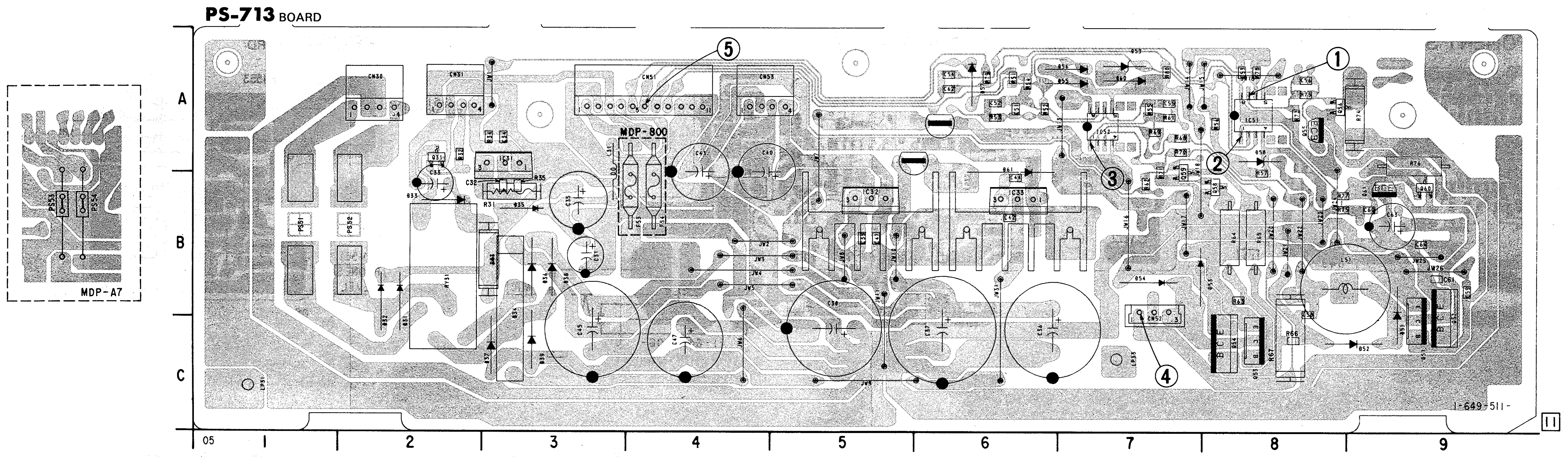
MB-702 BOARD (4/5)
MI-703 BOARD
HP-713 BOARD
(See page 95)
(See page 77)
(See page 55)
(See page 56)
(See page 75)
(See page 98)
(See page 71)
IC208
IC222
IC223
IC204
IC220
IC214
IC207
IC212
IC209
IC213
IC211
IC203
IC206
IC215
IC202
IC205
IC210
IC504
IC503
IC501
IC502


MB-702
(RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY
VS-706
(VOLTAGE SELECTOR)
ME-701
(MEMORY)
PS-713
(POWER SUPPLY)
TR-717
(POWER TRANSFORMER)
BI-702
(LD SIDE B, SIDE B LIMIT DETECTION
PW-706
(POWER SWITCH)
MT-702
(LOADING MOTOR)
HP-713
(PHONES JACK)
FP-722
(MODE CONTROL)
FG-704
(SPINDLE FG)
SW-725
(CONTROL SWITCHES)
MI-703
(MICROPHONE AMPLIFER)
SW-719
(LOAD/CHUCK SWITCHES
MT-703
(TILT MOTOR)
MD-703
(MECHANISM OPERATION DETECTION

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨⇨	⇨⇨⇨	⇨

MB-702 (POWER SUPPLY), PS-713 (POWER SUPPLY, SPINDLE SERVO), TR-717 (POWER TRANSFORMER) VS-706 (VOLTAGE SELECTOR) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

– Ref. No.: MB-702 Board; 1,000 series, PS-713, TR-717 and VS-706 Boards; 6,000 series –


PS-713 BOARD
MDP-A7
MDP-800
①
②
③
④
⑤
A
B
C
1
2
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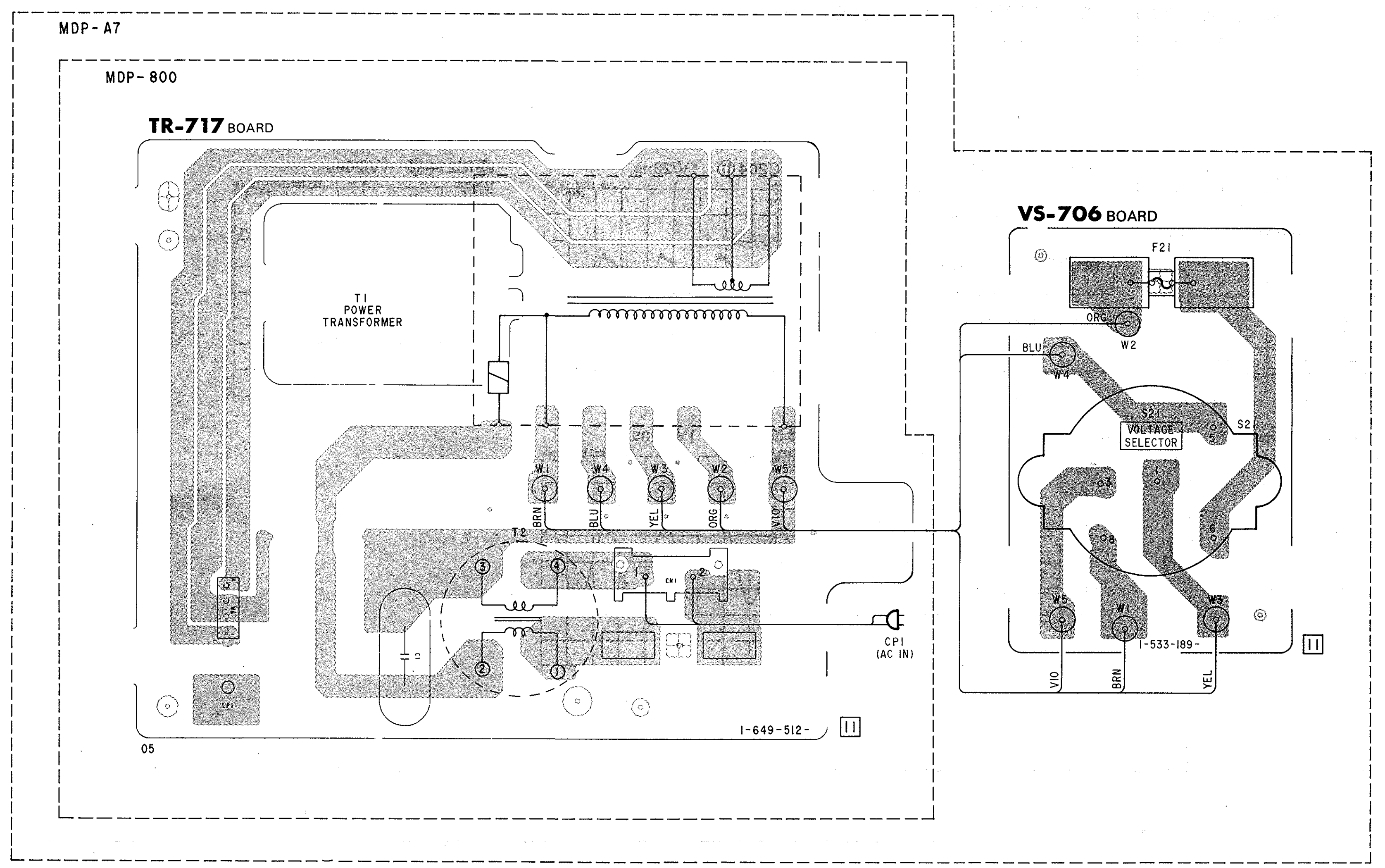
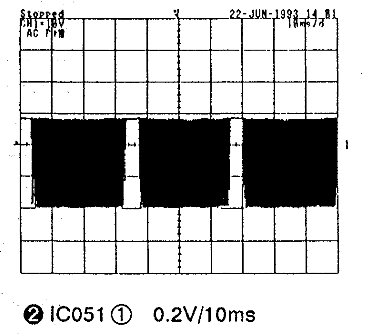
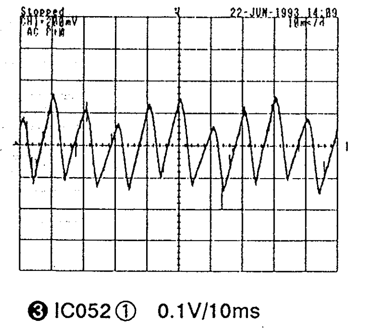
9
1-649-511-
11


MDP-A7
MDP-800
TR-717 BOARD
T1
POWER
TRANSFORMER
VS-706 BOARD
F21
W2
S2
VOLTAGE SELECTOR
BLU
VIO
BRN
YEL
CP1
(AC IN)
1-649-512-
1-533-189-
11

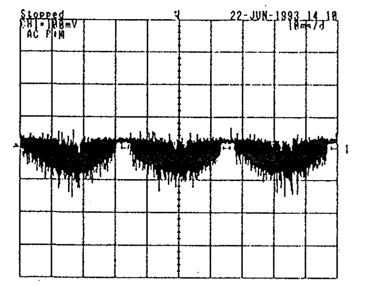
PS-713 BOARD



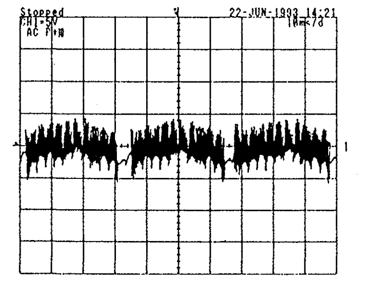
❶ IC051 ⑦ 10V/10ms



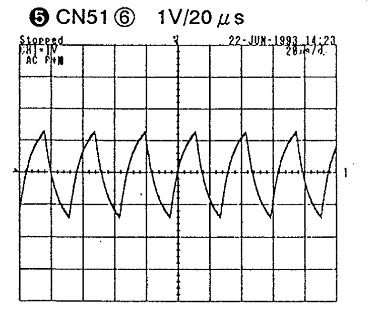
❷ IC051 ① 0.2V/10ms



❸ IC052 ① 0.1V/10ms



❹ CN52 ① 5V/10ms



❺ CN51 ⑥ 1V/20 μs

MDP-A7
TR-717 BOARD
AC IN
CN001
AC IN (L)
AC IN (N)
T001
POWER
TRANSFORMER
C001
BRN
BLU
YEL
ORG
VIO
R001
6.8M 1/2W
W001
AC 13V
GND
MDP-800
TR-717 BOARD
T1
POWER
TRANSFORMER
CN1
AC 13V
GND
S021
VOLTAGE
SELECTOR
F021
T400mAL
250V
VS-706 BOARD
MB-702 BOARD (5/5)
Q701
2SB1009R
+5V REG.
IC701
REG.
Q702
2SB1009R
-5V REG.
CN702
UNREG +16V
GND
UNREG -16V
POWER MUTE
SP OFF
2FH
SP ERROR
SPDL CTL
A GND
-5V
A GND
+5V
-16V
UNREG GND
+16V
TO
SERVO
SECTION
(See page 56)
-5V
A GND
A +5V
D +5V
D GND
TO
VIDEO
SECTION
(See page 71)
SP OFF
2F H
SP ERROR
SPDL CTL
+16V
UNREG GND
-5V
+5V
D GND
TO
SYSCON
SECTION
(See page 75)
A GND
D -5V
D GND
A +5V
D +5V
POWER MUTE
AA GND
TO
AUDIO
SECTION
(See page 89)
(CHASSIS)
B
TO
FP-722 BOARD
CN201
(See page 108)
CN031
EVER +5V
P.CONT
GND
-16V
CN030
AC 13V
GND
CN051
UNREG +16V
GND
UNREG -16V
POWER MUTE
SP OFF
2FH
SP ERROR
SPDL CTL
A GND
PS-713 BOARD
F031, 032
MDP-A7:250V T5A
MDP-800:125V 5A
D031, 32
RECT
RY031
Q031
2SD596
RELAY
DRIVE
IC031
+5V REG.
IC032
NJM78M08FA
+8V REG.
IC033
NJM79M08FA
-8V REG.
CN053
+8V
GND
-8V
A
TO
MB-702 BOARD
CN206
(See page 91)
PS053
PS054
IC051
AMP
IC052
AMP
Q053
2SB1151
FWD/RVS
Q054
2SC4396
FWD/RVS
Q055
2SC2712
SWITCH
Q059
2SA1162
SWITCH
CN052
SPINDLE +
SPINDLE -
M901
SPINDLE
1
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3
4
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6
7
8
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11
12
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14
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24
25
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28
A
B
C
D
E
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G
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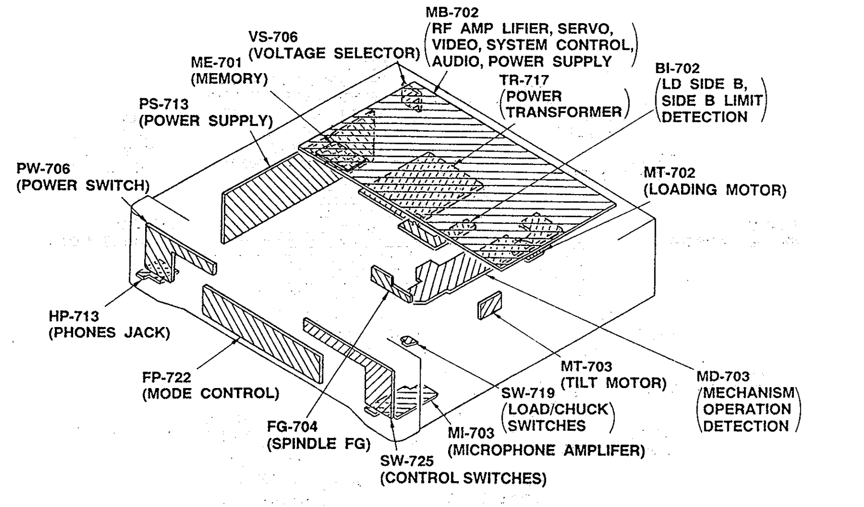
I
J

S021

AC VOLTAGE	PIN CONNECTION
120V	1-3, 6-8
220V	5-6
240V	1-6

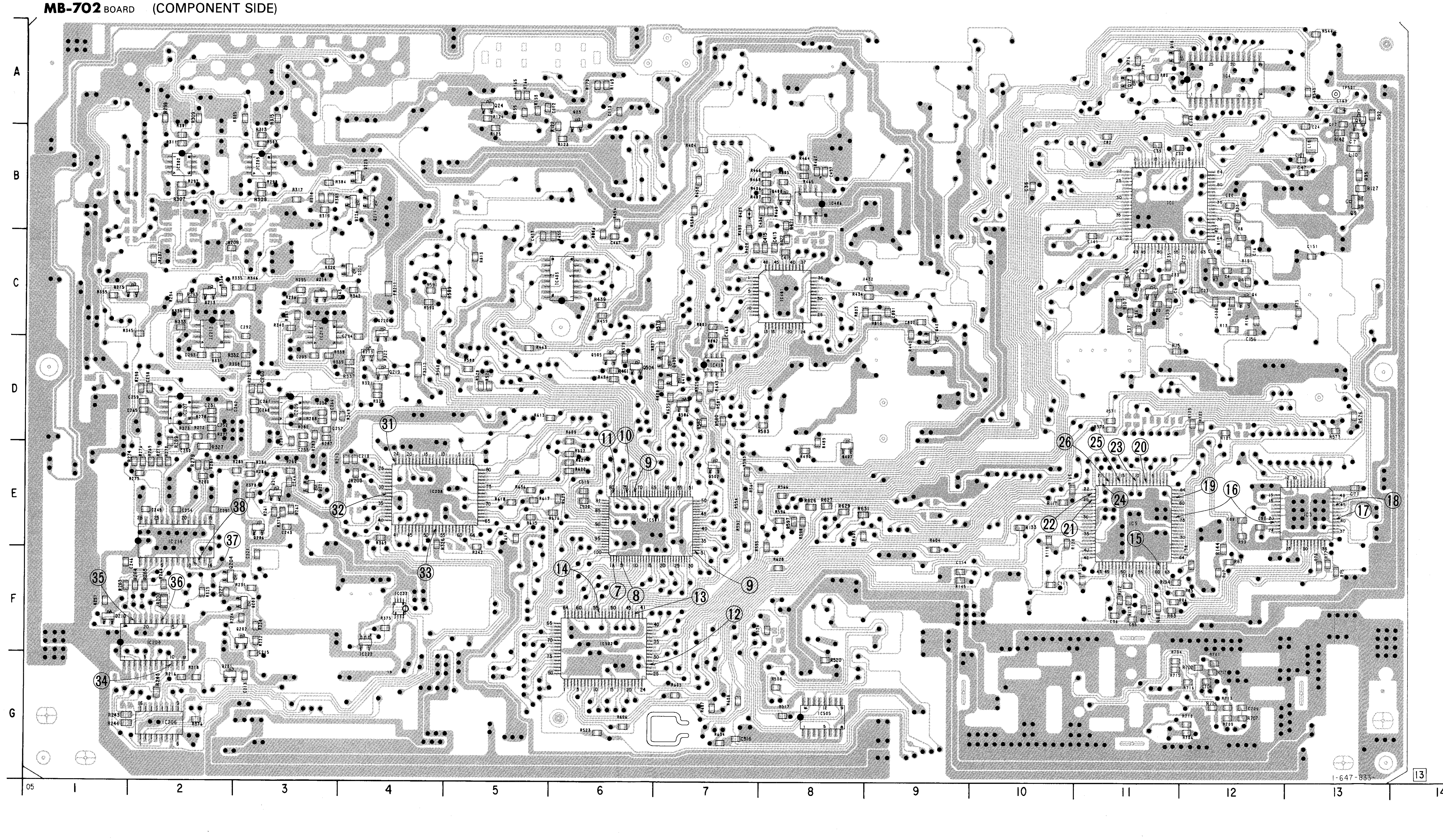

MB-702
(RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY)
VS-706
(VOLTAGE SELECTOR)
ME-701
(MEMORY)
TR-717
(POWER TRANSFORMER)
BI-702
(LD SIDE B, SIDE B LIMIT DETECTION)
PS-713
(POWER SUPPLY)
PW-706
(POWER SWITCH)
MT-702
(LOADING MOTOR)
HP-713
(PHONES JACK)
FP-722
(MODE CONTROL)
MT-703
(TILT MOTOR)
MD-703
(MECHANISM OPERATION DETECTION)
SW-719
(LOAD/CHUCK SWITCHES)
FG-704
(SPINDLE FG)
MI-703
(MICROPHONE AMPLIFER)
SW-725
(CONTROL SWITCHES)

SPINDLE PHASE SERVO	⟫
SPINDLE SERVO (SPEED AND PHASE)	⟫⟫
TRACKING SERVO LD/CD/CDV	▶
SLIDE SERVO LD/CD	▷
FOCUS SERVO LD/CD	▶
SKEW SERVO LD TILT	▷

MB-702 (POWER SUPPLY) PRINTED WIRING BOARD

– Ref. No.: MB-702 Board; 1,000 series –

MB-702 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
05
1
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8
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11
12
13
14
①
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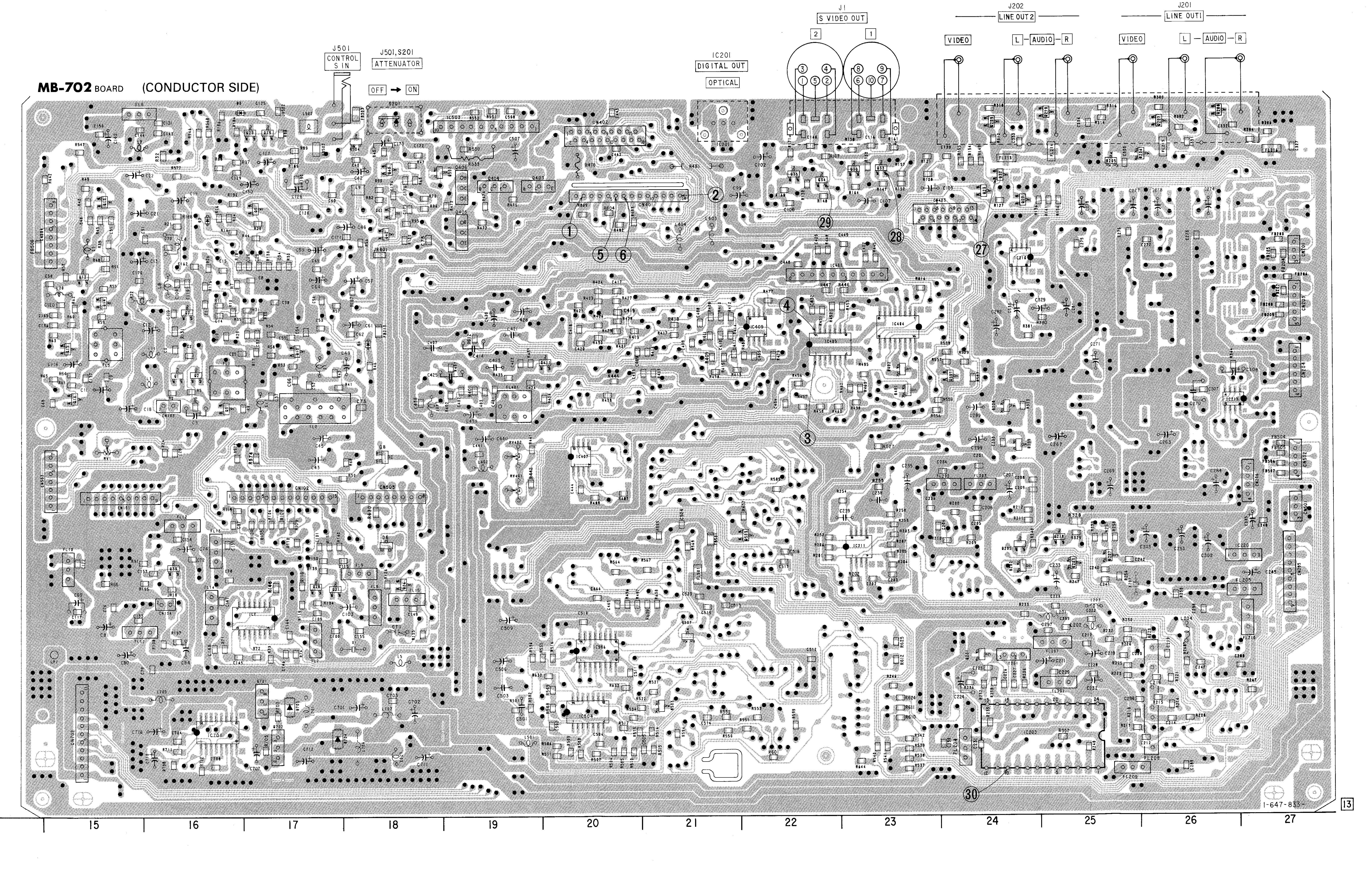
13

MB-702 BOARD (CONDUCTOR SIDE)


J501
CONTROL S IN
J501,S201
ATTENUATOR
OFF → ON
IC201
DIGITAL OUT
OPTICAL
J1
S VIDEO OUT
2
1
J202
LINE OUT2
VIDEO
L
AUDIO
R
J201
LINE OUT1
VIDEO
L
AUDIO
R
15
16
17
18
19
20
21
22
23
24
25
26
27
①
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③
④
⑤
⑥
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13

MB-702 BOARD

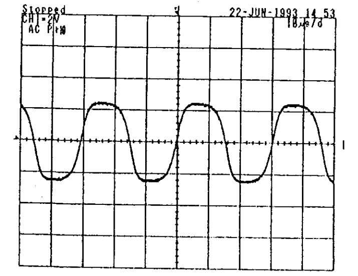
CN103	D-16
CN104	F-16
CN201	B-27
CN203	C-27
CN204	C-27
CN205	E-27
CN206	D-27
CN401	B-21
CN402	A-20
CN403	B-24
CN501	E-27
CN502	D-27
CN503	D-15
CN504	B-15
CN505	E-18
CN702	G-15
D002	B-16
D003	A-16
D004	C-18
D006	E-18
D201	F-24
D202	E-24
D203	E-25
D205	A-25
D206	A-26
D207	E-25
D208	D-24
D209	D-24
D210	F-1
D213	D-4
D401	C-23
D402	C-23
D405	B-7
D407	E-8
D502	A-18
D503	G-21
D504	A-17
D506	D-7
D507	F-21
D703	G-17
D704	G-17
IC001	B-11
IC003	E-13
IC004	A-12
IC005	E-11
IC007	F-17
IC201	A-21
IC202	B-2
IC203	G-24
IC204	F-2
IC205	B-3
IC206	G-2
IC207	D-2
IC208	E-4
IC209	D-3
IC210	B-24
IC211	E-23
IC212	C-2
IC213	C-3
IC214	E-2
IC215	D-26
IC220	E-27
IC222	F-4
IC223	F-4
IC401	C-8
IC402	B-22
IC403	C-6
IC404	C-23
IC405	C-22
IC406	B-8
IC407	D-20
IC409	C-22
IC410	D-7
IC501	E-6
IC502	F-6
IC503	A-19
IC504	G-20
IC505	G-8
IC506	F-20
IC701	G-16
Q001	C-16
Q002	C-16
Q003	D-16
Q004	C-12
Q005	B-17
Q006	A-13
Q007	C-16
Q008	B-18
Q009	B-13
Q010	B-15
Q011	C-11
Q012	B-15
Q013	C-17
Q014	C-15
Q015	C-15
Q016	D-15
Q017	A-11
Q018	A-11
Q019	A-17
Q020	A-17
Q023	A-24
Q024	A-5
Q025	A-6
Q026	E-18
Q027	B-24
Q028	E-17
Q030	A-23
Q031	E-17
Q032	A-24
Q033	A-23
Q034	A-22
Q035	A-22
Q039	E-16
Q040	A-18
Q041	B-18
Q042	B-18
Q201	G-2
Q202	F-3
Q203	F-3
Q204	F-2
Q205	E-24
Q206	E-3
Q207	A-26
Q208	A-26
Q209	A-24
Q210	A-25
Q211	B-4
Q212	C-4
Q213	C-2
Q214	C-3
Q215	C-1
Q217	E-3
Q218	E-25
Q219	D-4
Q220	C-4
Q221	E-3
Q225	B-4
Q226	B-4
Q401	C-9
Q403	A-19
Q404	A-19
Q405	B-19
Q406	A-19
Q408	B-8
Q409	D-7
Q410	D-7
Q411	C-20
Q501	C-24
Q502	E-7
Q503	E-22
Q504	D-6
Q505	D-6
Q701	F-17
Q702	G-17

FP-722 (MODE CONTROL), SW-725 (CONTROL SWITCHES), PW-706 (POWER SWITCH) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

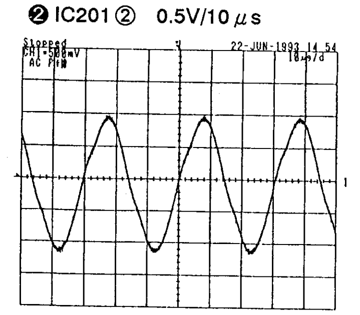
– Ref. No.:FP-722, SW-725 and PW-706 Boards; 7,000 series –

FP-722 BOARD

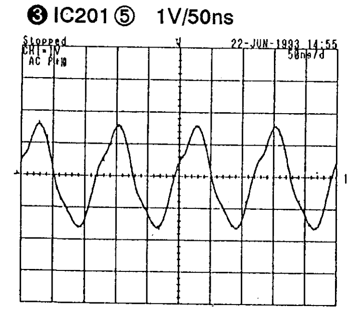
❶ IC201 ① 2V/10 μs



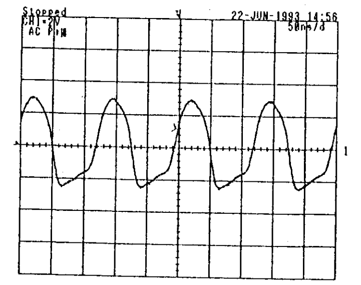
❷ IC201 ② 0.5V/10 μs

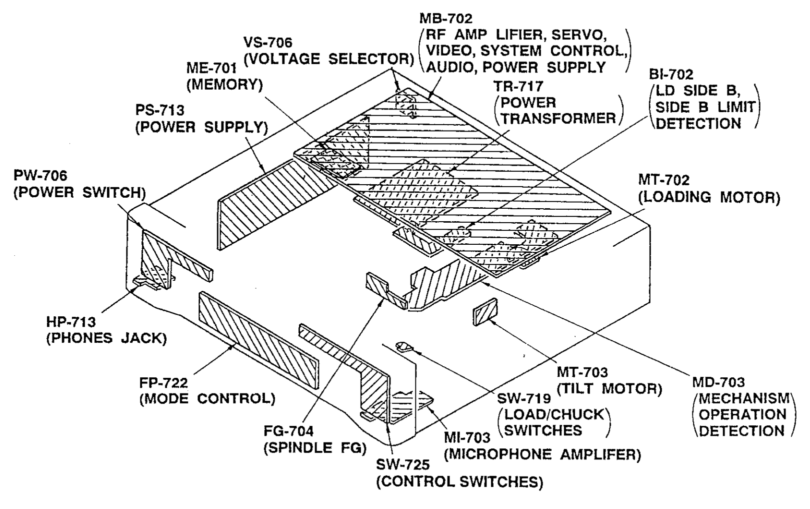


❸ IC201 ⑤ 1V/50ns

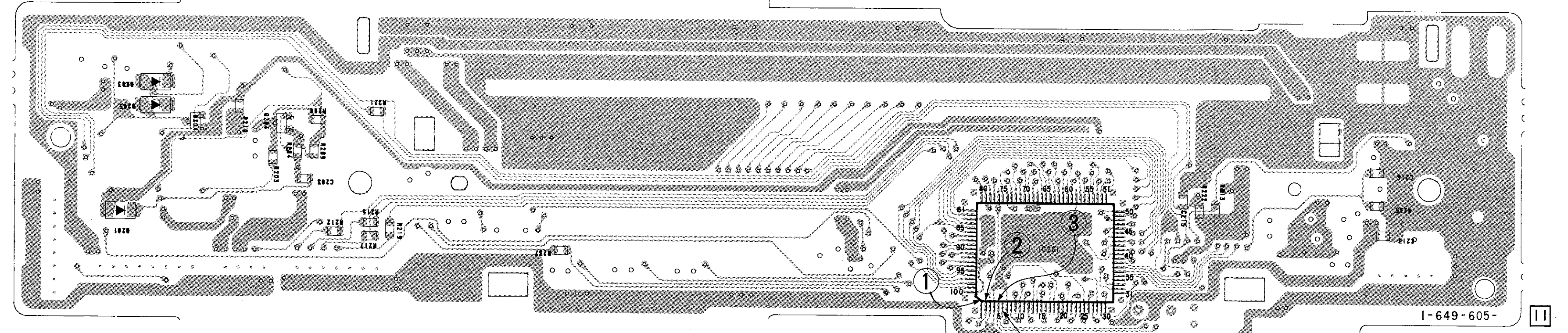


❹ IC201 ⑥ 2V/50ns

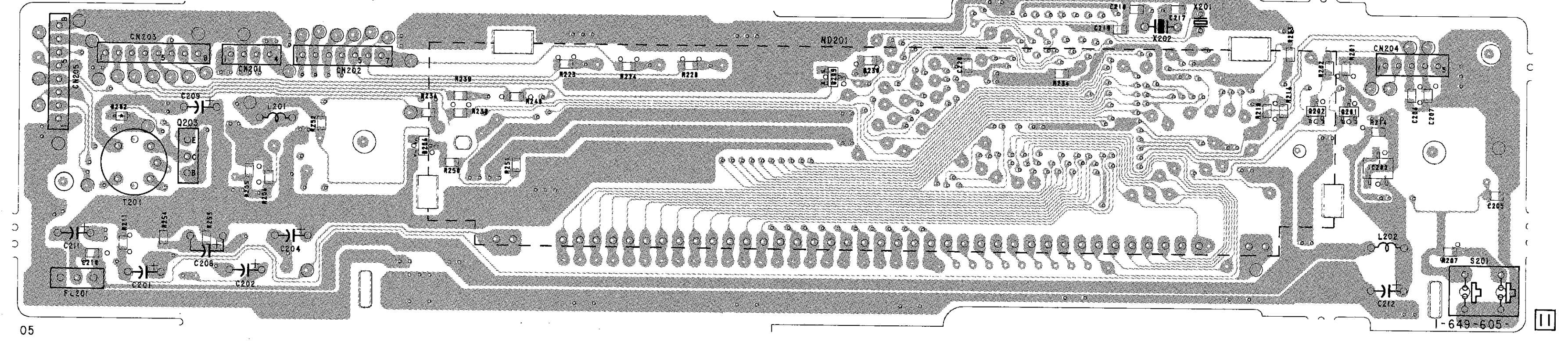



VS-706 (VOLTAGE SELECTOR)
ME-701 (MEMORY)
MB-702 (RF AMP LIFIER, SERVO, VIDEO, SYSTEM CONTROL, AUDIO, POWER SUPPLY)
TR-717 (POWER TRANSFORMER)
BI-702 (LD SIDE B, SIDE B LIMIT DETECTION)
PS-713 (POWER SUPPLY)
PW-706 (POWER SWITCH)
MT-702 (LOADING MOTOR)
HP-713 (PHONES JACK)
FP-722 (MODE CONTROL)
FG-704 (SPINDLE FG)
MT-703 (TILT MOTOR)
MD-703 (MECHANISM OPERATION DETECTION)
SW-719 (LOAD/CHUCK SWITCHES)
MI-703 (MICROPHONE AMPLIFER)
SW-725 (CONTROL SWITCHES)

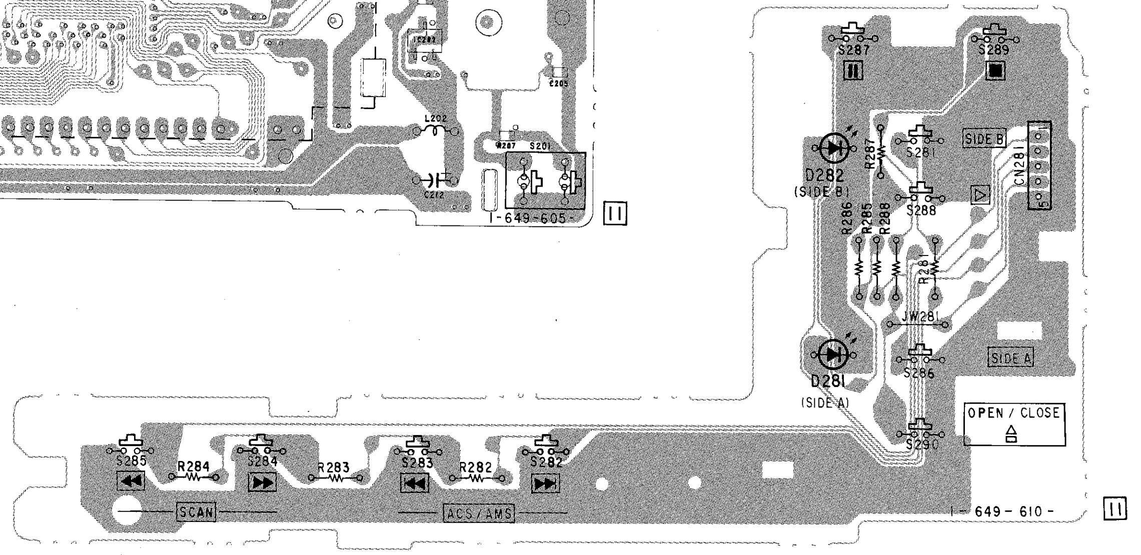
FP-722 BOARD (COMPONENT SIDE)


IC201
1
2
3
4
1-649-605-
11

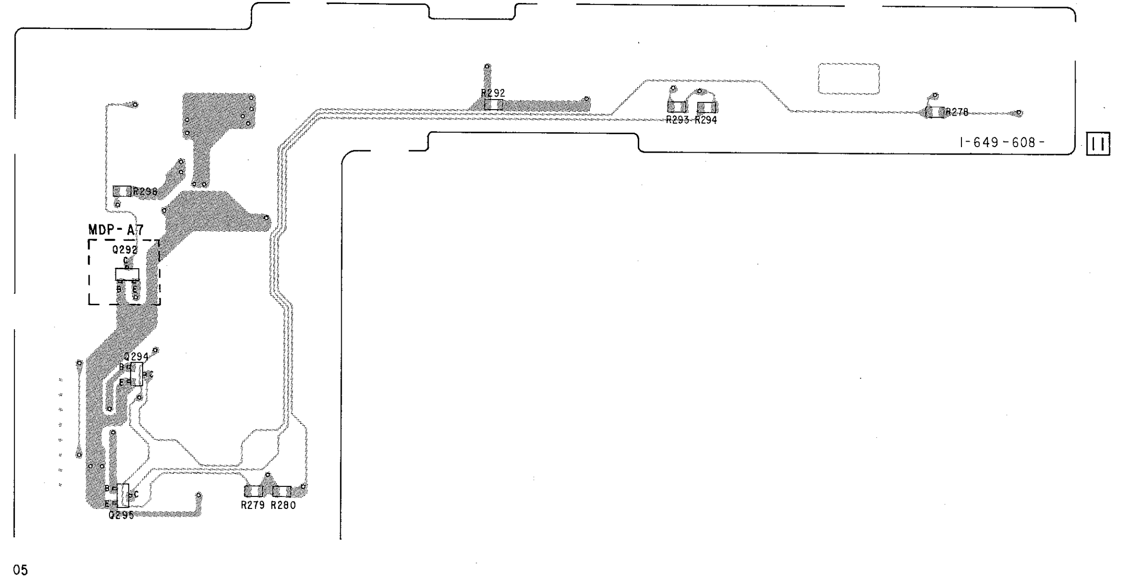
FP-722 BOARD (CONDUCTOR SIDE)


CN203
ND201
1-649-605-
11
05

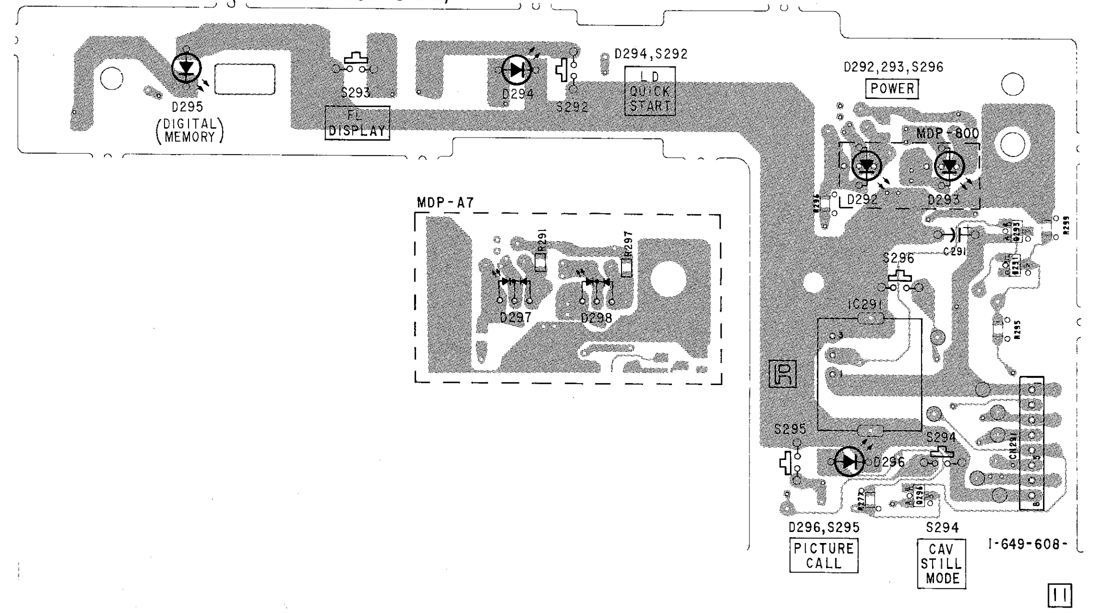
SW-725 BOARD

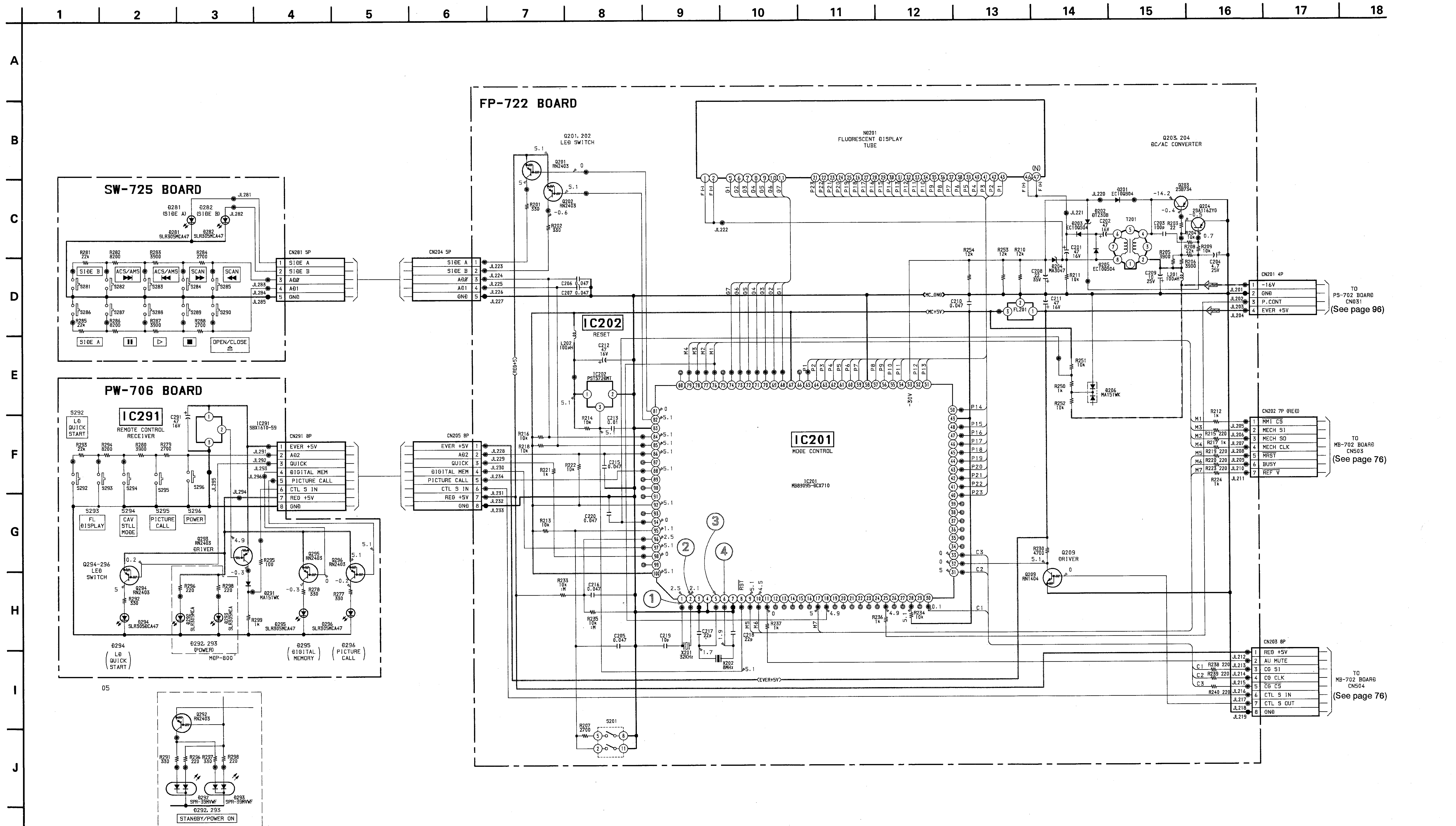

D282 (SIDE B)
D281 (SIDE A)
OPEN/CLOSE
SCAN
1-649-610-
11
05

PW-706 BOARD (COMPONENT SIDE)


MDP-A7
1-649-606-
11
05

PW-706 BOARD (CONDUCTOR SIDE)


D295 (DIGITAL MEMORY)
D293 DISPLAY
D294,S292 LD QUICK START
D292,293,S296 POWER
MDP-A7
D296,S295 PICTURE CALL
S294 CAV STILL MODE
1-649-608-
11


1
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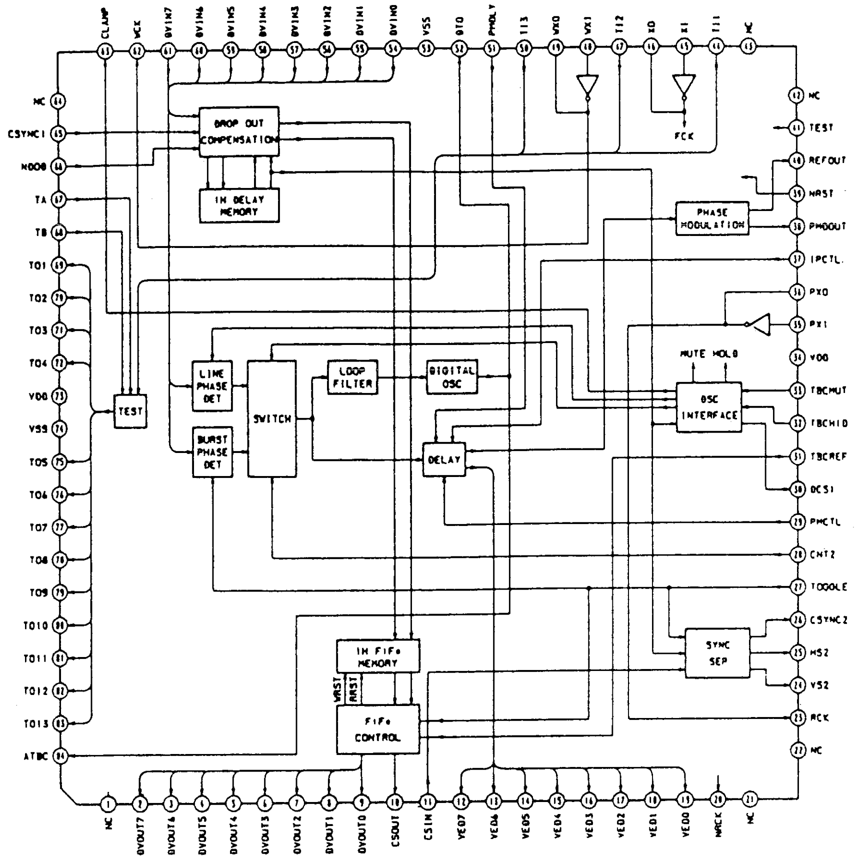
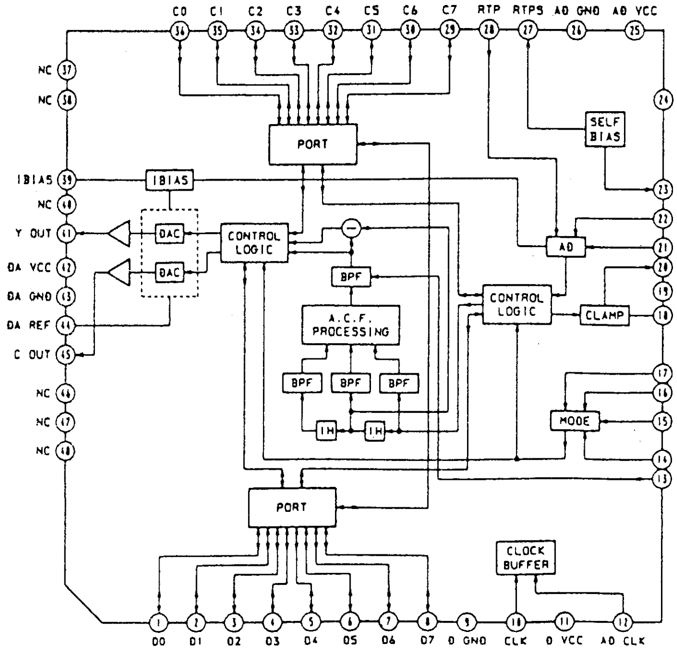
16
17
18
A
B
C
D
E
F
G
H
I
J
SW-725 BOARD
D281 (SIDE A)
D282 (SIDE B)
D281 SLR305MCA47
D282 SLR305MCA47
SIDE B
ACS/AMS
SCAN
SIDE A
OPEN/CLOSE
CN281 5P
1 SIDE A
2 SIDE B
3 AD0
4 AD1
5 GND
PW-706 BOARD
S292 LD QUICK START
IC291 REMOTE CONTROL RECEIVER
IC291 SBX1610-59
S293 FL DISPLAY
S294 CAV STLL MODE
S295 PICTURE CALL
S296 POWER
CN291 8P
1 EVER +5V
2 AD2
3 QUICK
4 DIGITAL MEM
5 PICTURE CALL
6 CTL S IN
7 REG +5V
8 GND
Q293 RN2403 DRIVER
Q294-296 LED SWITCH
D294 SLR305DCA47
D291 MA151WK
D295 SLR305MCA47
D296 SLR305MCA47
D294 (LD QUICK START)
D292, 293 (POWER)
MDP-800
D295 (DIGITAL MEMORY)
D296 (PICTURE CALL)
05
Q292 RN2403
D292 SPR-39MVWF
D293 SPR-39MVWF
D292, 293
STANDBY/POWER ON
MDP-A7
FP-722 BOARD
Q201, 202 LED SWITCH
CN204 5P
CN205 8P
IC202 RESET
IC202 PST572DMT
ND201 FLUORESCENT DISPLAY TUBE
Q203, 204 DC/AC CONVERTER
Q203 2SB734
Q204 2SA1162YG
T201
IC201 MODE CONTROL
IC201 MB89095-DCX710
X201 32KHz
X202 8MHz
S201
Q209 DRIVER
CN201 4P
1 -16V
2 GND
3 P.CONT
4 EVER +5V
TO PS-702 BOARD CN031 (See page 96)
CN202 7P (RED)
1 MMI CS
2 MECH SI
3 MECH SO
4 MECH CLK
5 MRST
6 BUSY
7 REF V
TO MB-702 BOARD CN503 (See page 76)
CN203 8P
1 REG +5V
2 AU MUTE
3 CG SI
4 CG CLK
5 CG CS
6 CTL S IN
7 CTL S OUT
8 GND
TO MB-702 BOARD CN504 (See page 76)

• IC BLOCK DIAGRAMS

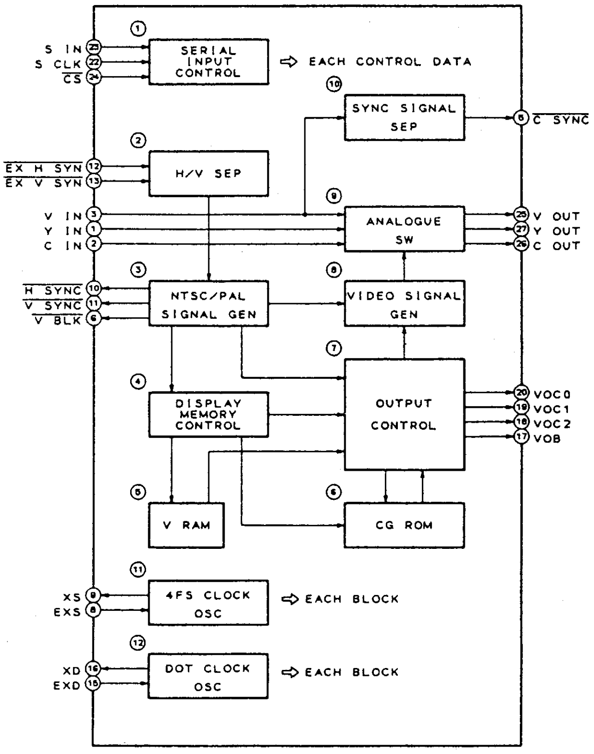
IC001 CXD8404Q (MB-702 Board)


CLAMP
WCK
DVIN7
DVIN6
DVIN5
DVIN4
DVIN3
DVIN2
DVIN1
DVIN0
VSS
DTO
PHDLY
TI3
VXO
VXI
TI2
XO
XI
TI1
NC
NC
CSYNC1
MODE
TA
TB
TO1
TO2
TO3
TO4
VDD
VSS
TO5
TO6
TO7
TO8
TO9
TO10
TO11
TO12
TO13
ATBC
NC
TEST
REFOUT
NRST
PMODOUT
IPCTL.
PXO
PXI
VDD
TBCMUT
TBCHID
TBCREF
DCSI
PHCTL
CNT2
TOGGLE
CSYNC2
HS2
VS2
RCK
NC
NC
DVOUT7
DVOUT6
DVOUT5
DVOUT4
DVOUT3
DVOUT2
DVOUT1
DVOUT0
CSOUT
CSIN
VED7
VED6
VED5
VED4
VED3
VED2
VED1
VED0
WRCK
NC
DROP OUT COMPENSATION
1H DELAY MEMORY
FCK
PHASE MODULATION
MUTE HOLD
OSC INTERFACE
LINE PHASE DET
BURST PHASE DET
SWITCH
LOOP FILTER
DIGITAL OSC
DELAY
TEST
SYNC SEP
1H FIFo MEMORY
VRST
RRST
FIFo CONTROL

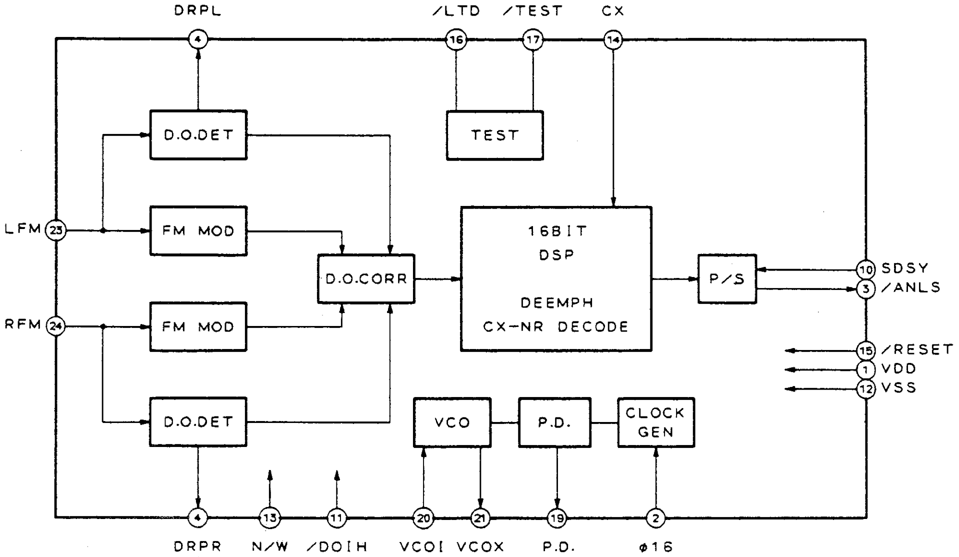
IC003 CXD8405Q (MB-702 Board)


C0
C1
C2
C3
C4
C5
C6
C7
RTP
RTPS
AD GND
AD VCC
NC
NC
IBIAS
NC
Y OUT
DA VCC
DA GND
DA REF
C OUT
NC
NC
NC
NC
RBTS
RBT
V IN
CL OUT
D GND
CLC
TE1
TE0
MODE1
MODE0
BV
D0
D1
D2
D3
D4
D5
D6
D7
D GND
CLK
D VCC
AD CLK
PORT
SELF BIAS
IBIAS
DAC
DAC
CONTROL LOGIC
BPF
A.C.F. PROCESSING
BPF
BPF
BPF
1H
1H
AD
CONTROL LOGIC
CLAMP
MODE
PORT
CLOCK BUFFER

IC004 MB90085 (MB-702 Board)

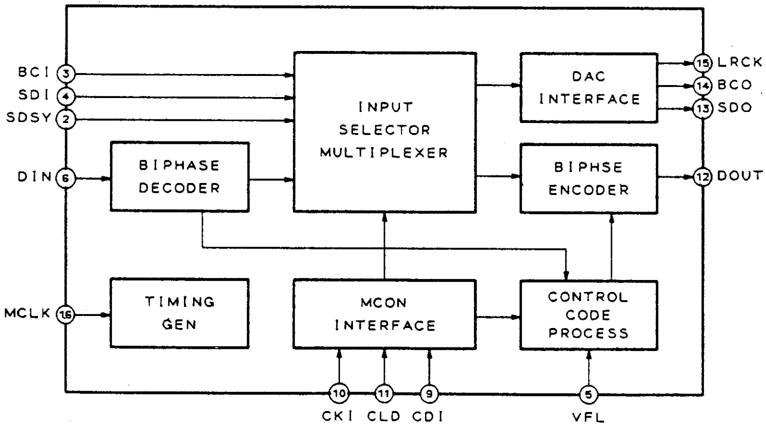

S IN
S CLK
CS
SERIAL INPUT CONTROL
EACH CONTROL DATA
SYNC SIGNAL SEP
C SYNC
EX H SYN
EX V SYN
H/V SEP
V IN
Y IN
C IN
ANALOGUE SW
V OUT
Y OUT
C OUT
H SYNC
V SYNC
V BLK
NTSC/PAL SIGNAL GEN
VIDEO SIGNAL GEN
DISPLAY MEMORY CONTROL
OUTPUT CONTROL
VOC0
VOC1
VOC2
VOB
V RAM
CG ROM
XS
EXS
4FS CLOCK OSC
EACH BLOCK
XD
EXD
DOT CLOCK OSC
EACH BLOCK

IC203 YM7110 (MB-702 Board)



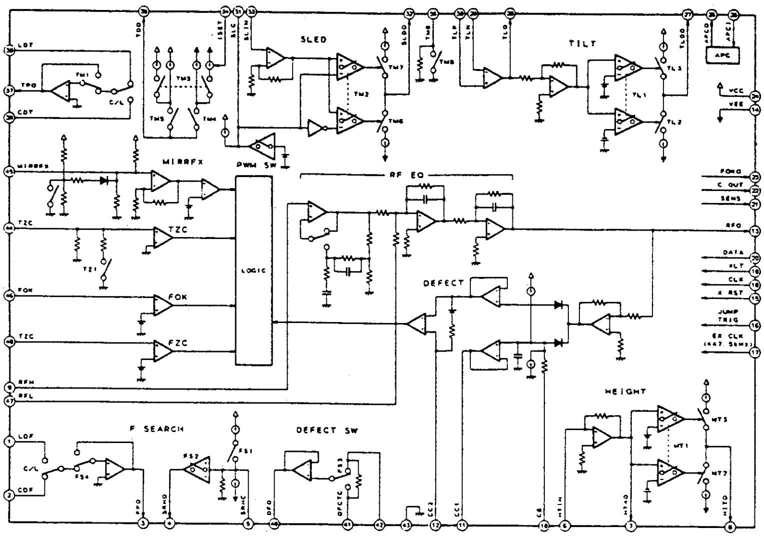
DRPL
/LTD
/TEST
CX
D.O.DET
TEST
LFM
FM MOD
16BIT
DSP
DEEMPH
CX-NR DECODE
D.O.CORR
P/S
SDSY
/ANLS
RFM
FM MOD
/RESET
VDD
VSS
D.O.DET
VCO
P.D.
CLOCK GEN
DRPR
N/W
/DOIH
VCOI
VCOX
P.D.
φ16

IC206 YSD221-ME2 (MB-702 Board)



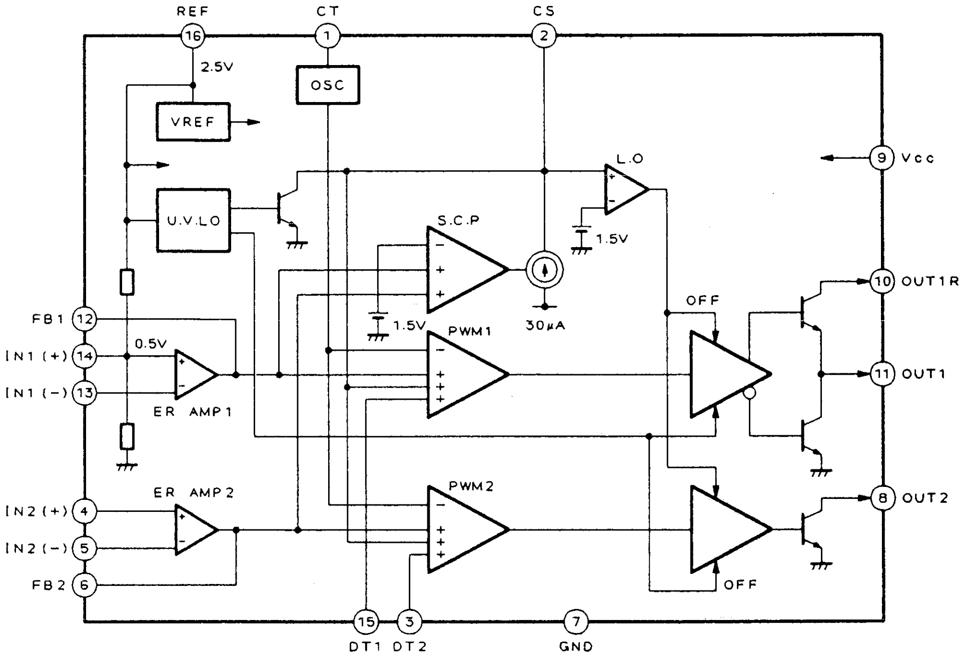
BCI
SDI
SDSY
DIN
MCLK
INPUT SELECTOR MULTIPLEXER
DAC INTERFACE
LRCK
BCO
SDO
BIPHASE DECODER
BIPHSE ENCODER
DOUT
TIMING GEN
MCON INTERFACE
CONTROL CODE PROCESS
CKI
CLD
CDI
VFL

IC402 CXA1632Q (MB-702 Board)

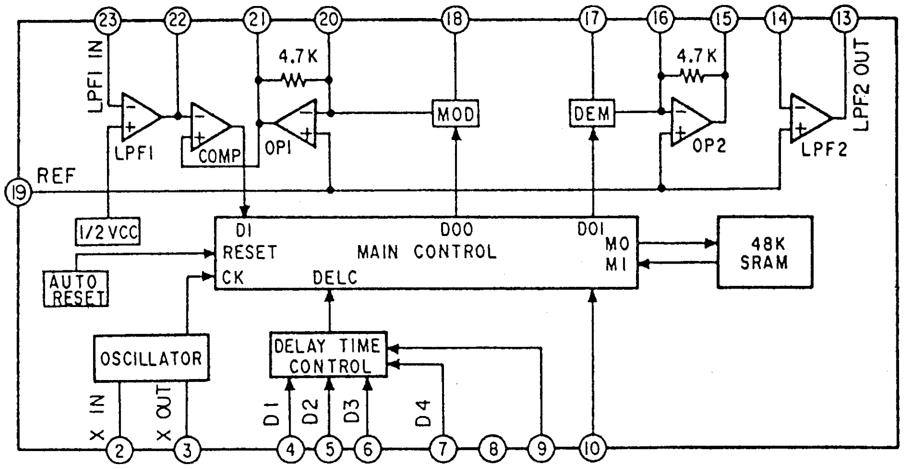


TDO
ISET
SLC
SLIN
SLED
SLDO
TMB
TLP
TLN
TLO
TILT
TLDO
APCO
APCI
APC
LDT
TPO
CDT
TM1
C/L
TM3
TM5
TM4
TM7
TM2
TM6
TM8
TL3
TL1
TL2
VCC
VEE
MIRRFX
PWM SW
RF EQ
FOKO
C OUT
SENS
RFO
TZC
TZ1
LOGIC
DATA
XLT
CLK
X RST
FOK
DEFECT
JUMP TRIG
EX CLK (447.5kHz)
FZC
RFM
RFL
HEIGHT
F SEARCH
DEFECT SW
LDF
CDF
FS4
FS2
FS1
FS3
HT3
HT1
HT2
FPO
SRHO
SRHC
DFO
DFCTC
CC2
CC1
CB
HTIN
HTAO
HTTO

IC701 FA7611M (MB-702 Board)

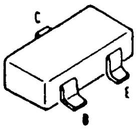

REF
CT
CS
16
1
2
2.5V
OSC
VREF
L.O
9 Vcc
U.V.LO
S.C.P
1.5V
1.5V
30µA
PWM1
OFF
10 OUT1R
FB1 12
IN1 (+) 14
IN1 (−) 13
0.5V
ER AMP1
11 OUT1
ER AMP2
PWM2
IN2 (+) 4
IN2 (−) 5
FB2 6
8 OUT2
OFF
15
3
7
DT1
DT2
GND

IC501 M65831FP-600C (MI-703 Board)

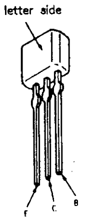

23
22
21
20
18
17
16
15
14
13
LPF1 IN
4.7K
4.7K
LPF2 OUT
LPF1
COMP
OP1
MOD
DEM
OP2
LPF2
19 REF
1/2 VCC
DI
RESET
MAIN CONTROL
DOO
DOI
MO
MI
CK
DELC
48K SRAM
AUTO RESET
OSCILLATOR
DELAY TIME CONTROL
X IN
X OUT
D1
D2
D3
D4
2
3
4
5
6
7
8
9
10

4-3. SEMICONDUCTORS

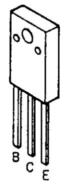
RN1404
RN2402
RN2403
2SA1162
2SC2712-G
2SC3326N



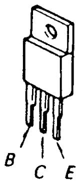
2SA1309A
2SC3311A


letter side
E
C
B

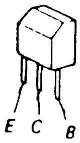
2SB1009R



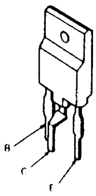
2SB1370



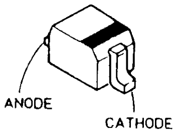
2SB734



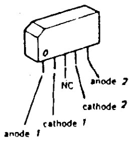
2SD2061



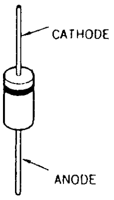
DTZ30B
EC10QS-04
1SS355


ANODE
CATHODE

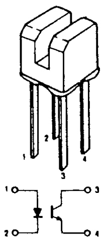
D3SBA10-4100


NC
anode 2
cathode 2
cathode 1
anode 1

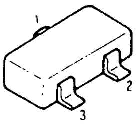
ERA81-004


CATHODE
ANODE

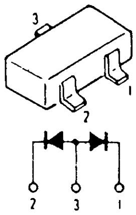
GP1S24



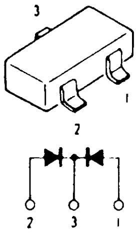
KV1460TL00



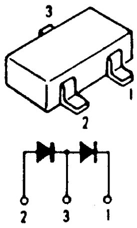
MA151WA



MA151WK



MA153



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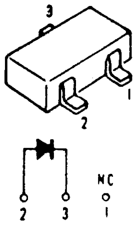
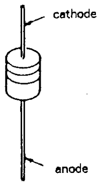
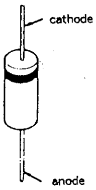
MA3082
MA3091
MA3120



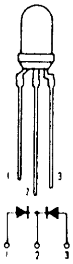
RD4.3ES-B2
RD5.1ES-B2
1SS119
11ES2


cathode
anode

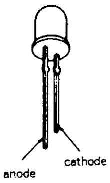
S3V40


cathode
anode

SLR-305MCA47



SLR932A


anode
cathode

SECTION 5

EXPLODED VIEWS

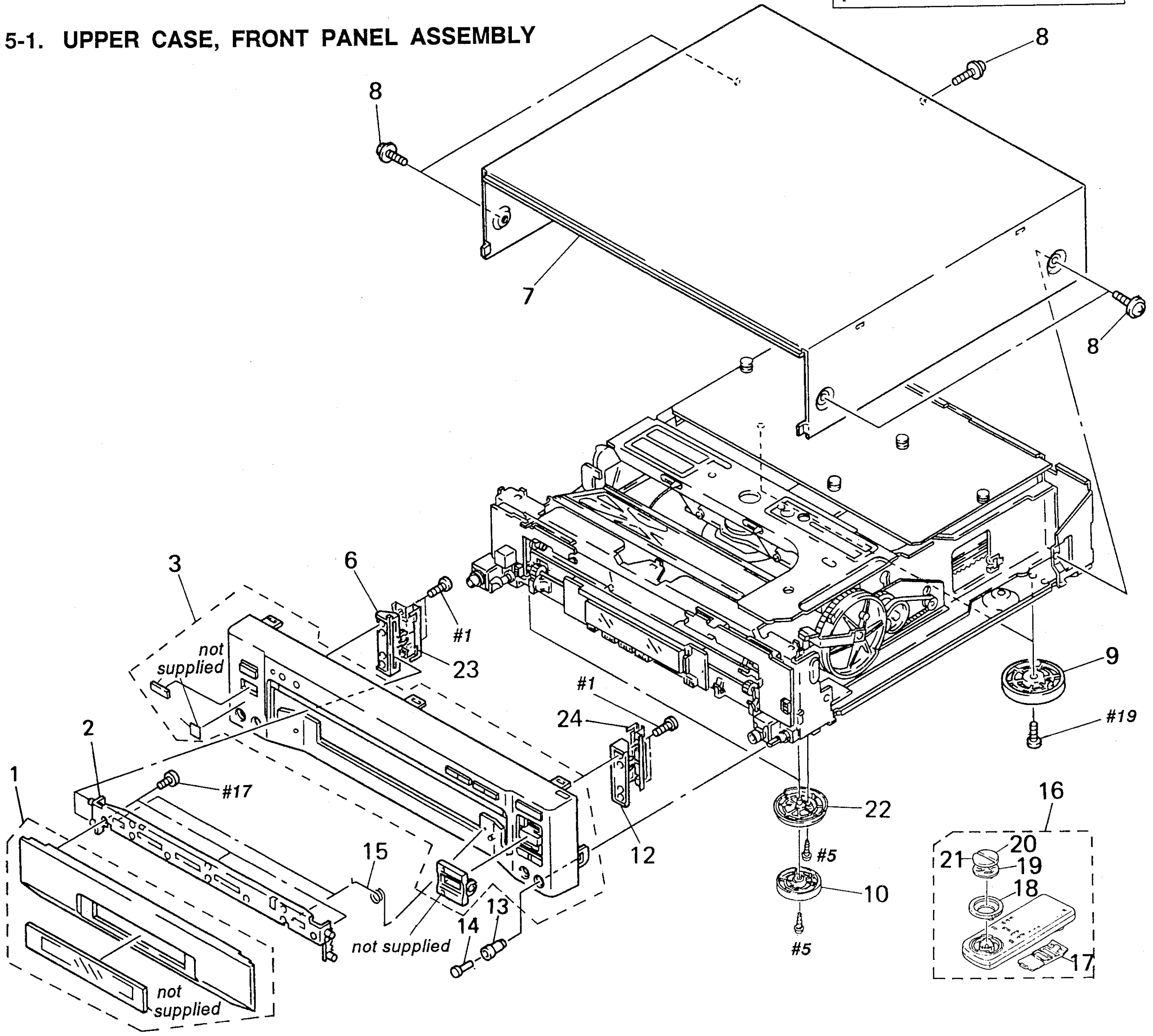
NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

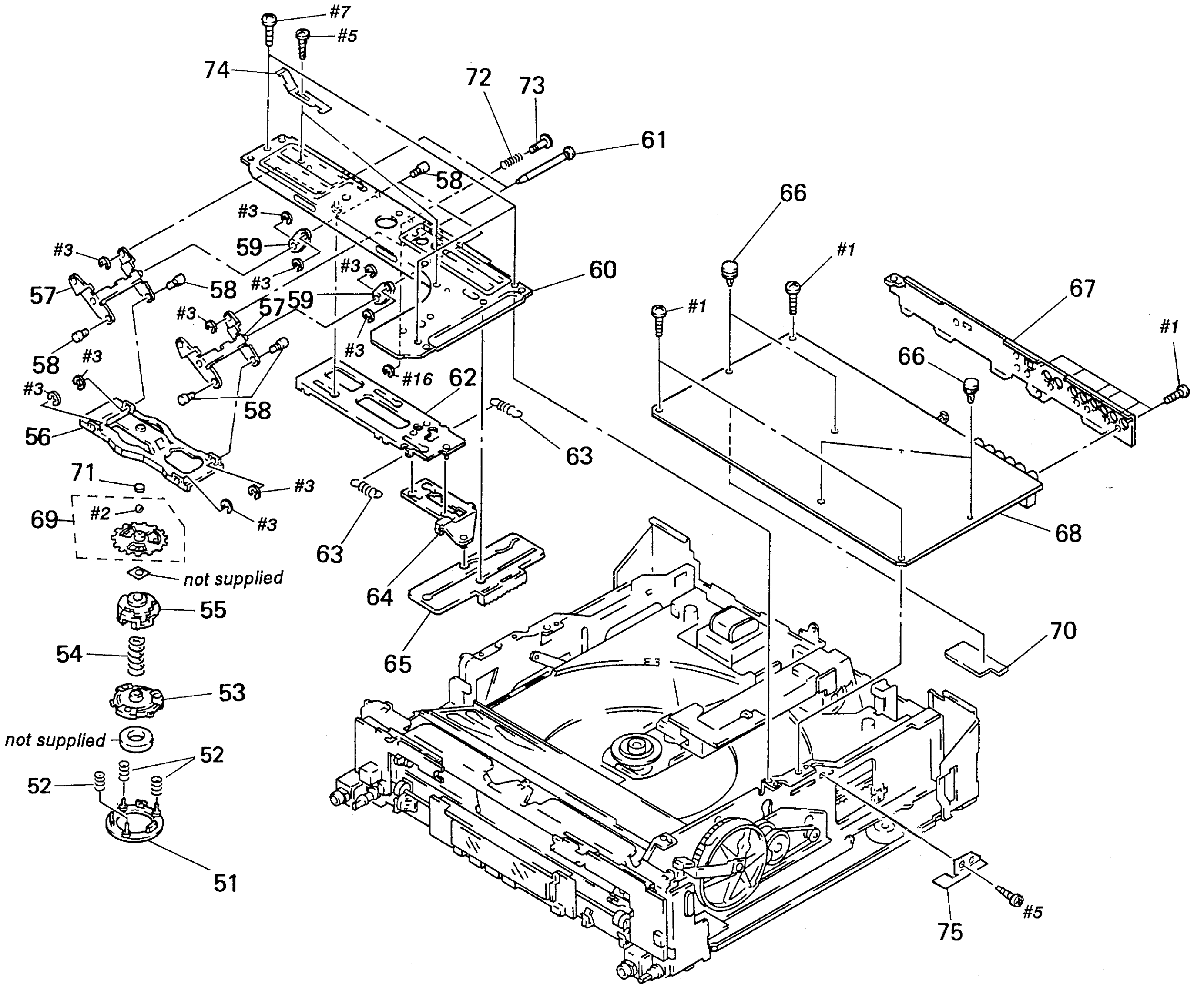
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

5-1. UPPER CASE, FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	X-3943-247-1	DOOR ASSY (A7)	
1	X-3943-254-1	DOOR ASSY (800)	
2	X-3942-785-1	DISK ASSY, DOOR	
3	X-3943-252-1	PANEL ASSY FRONT (800)	
3	X-3943-257-1	PANEL ASSY FRONT (A7)	
* 6	3-953-312-01	HOLDER (L), SLIDE	
* 7	X-3942-909-1	CASE ASSY, UPPER	
8	3-710-901-41	SCREW, TAPPING	
9	X-3943-008-1	FOOT ASSY	
10	X-3363-548-1	FOOT ASSY	
* 12	3-953-313-01	HOLDER (R), SLIDE	
13	3-953-319-11	KNOB, ECHO	
14	3-953-318-11	KNOB, MICROPHONE	
15	3-955-346-11	SPRING, TORSION	
16	1-466-828-41	REMOTE COMMANDER (RMT-M20A)	
17	3-943-535-01	LID, BATTERY CASE	
18	3-951-034-01	RING, SHUTTLE	
19	3-951-033-01	HOLDER, DIAL	
20	3-941-617-21	BUTTON PLAY	
21	3-941-618-21	BUTTON PAUSE	
22	3-955-343-11	COVER, FOOT	
23	3-955-613-01	SPRING(MAIN)(L), ELECTROSTATIC	
24	3-955-614-01	SPRING(MAIN)(R), ELECTROSTATIC	

5-2. CHUCK FRAME ASSEMBLY


#7
#5
74
72
73
61
58
66
#1
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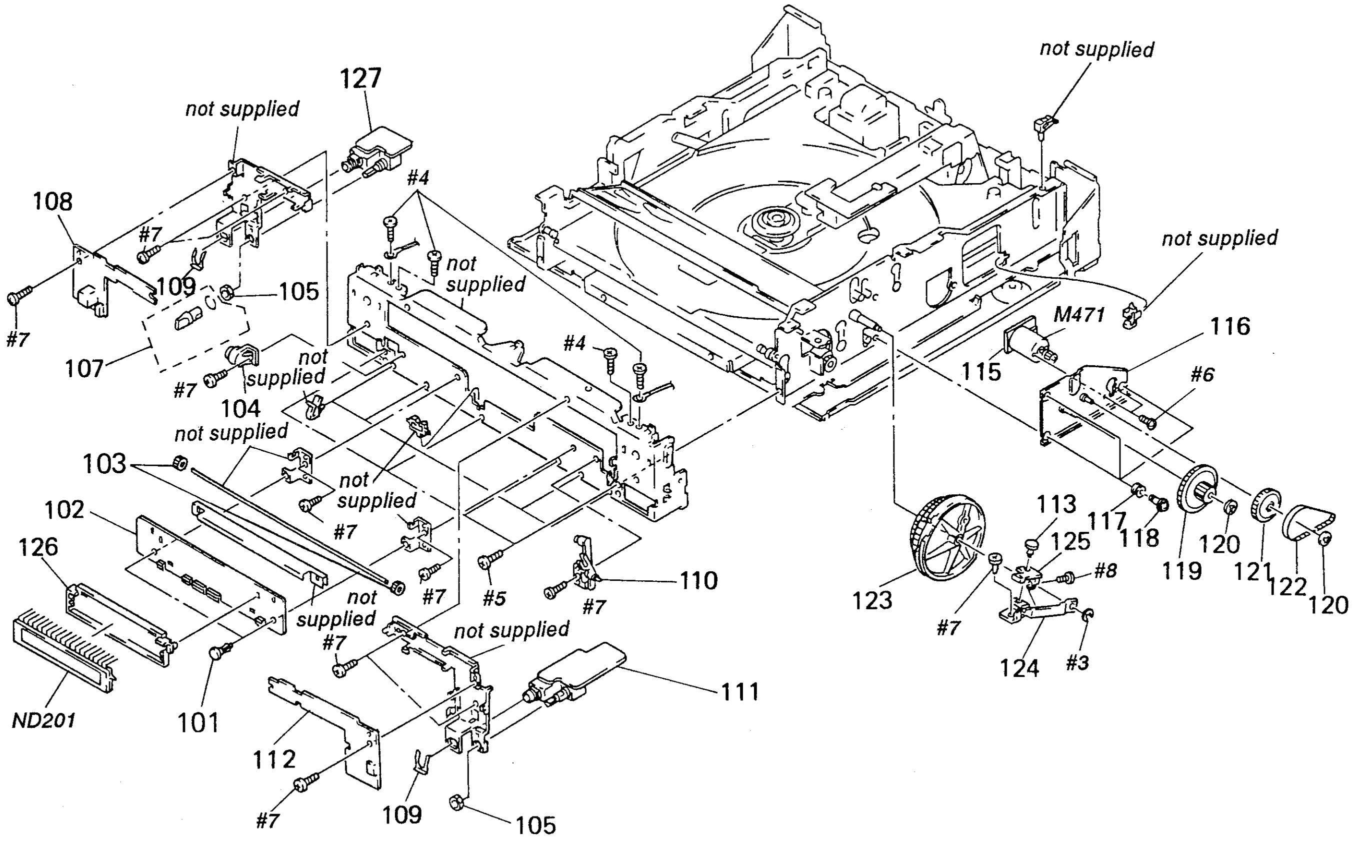
58
#3
57
59
60
#1
#1
66
#3
#3
58
#3
#3
#16
62
56
58
63
71
#3
69
#2
#3
63
not supplied
64
55
70
54
65
53
not supplied
52
52
51
75
#5

Ref. No.	Part No.	Description	Remark
51	X-3943-043-1	GUIDE (B) ASSY, CENTER	
52	3-953-290-01	SPRING (2), COMPRESSION	
53	X-3942-776-1	HOLDER ASSY, MAGNET	
54	3-953-291-01	SPRING (1), COMPRESSION	
55	3-953-288-01	PLATE, CHUCKING	
* 56	3-953-354-01	PLATE, CHUCK	
* 57	X-3942-801-1	ARM (L) ASSY	
* 58	3-953-345-01	SHAFT, ARM (S)	
* 59	3-953-352-01	ARM (S)	
* 60	X-3942-798-1	FRAME ASSY, CHUCK	
* 61	3-953-355-01	SHAFT, SLIDE	
* 62	X-3942-799-1	PLATE ASSY, SLIDE	
63	3-486-135-XX	SPRING, TENSION	
* 64	X-3942-800-1	LIMITER ASSY	
65	3-953-348-01	CAM, CHUCK	
* 66	4-386-173-01	SPACER	
* 67	3-953-380-11	PLATE, JACK	
* 68	A-6423-038-A	MB-702 BOARD, COMPLETE (A7)	
* 68	A-6423-047-A	MB-702 BOARD, COMPLETE (800)	
69	X-3942-787-1	PLATE ASSY, TOP	
* 70	A-6423-049-A	ME-701 BOARD, COMPLETE	
71	3-953-392-01	RETAINER, THRUST	
72	3-353-241-01	SPRING, COMPRESSION	
* 73	3-953-831-01	STOPPER, OPT	
74	3-735-089-01	SPRING (800)	
75	3-955-673-01	SPRING, LEAF	

5-3. SUB FRONT PANEL ASSEMBLY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not supplied
108
#7
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105
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not supplied
103
102
126
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#7
#4
#7
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#7
#5
#7
110
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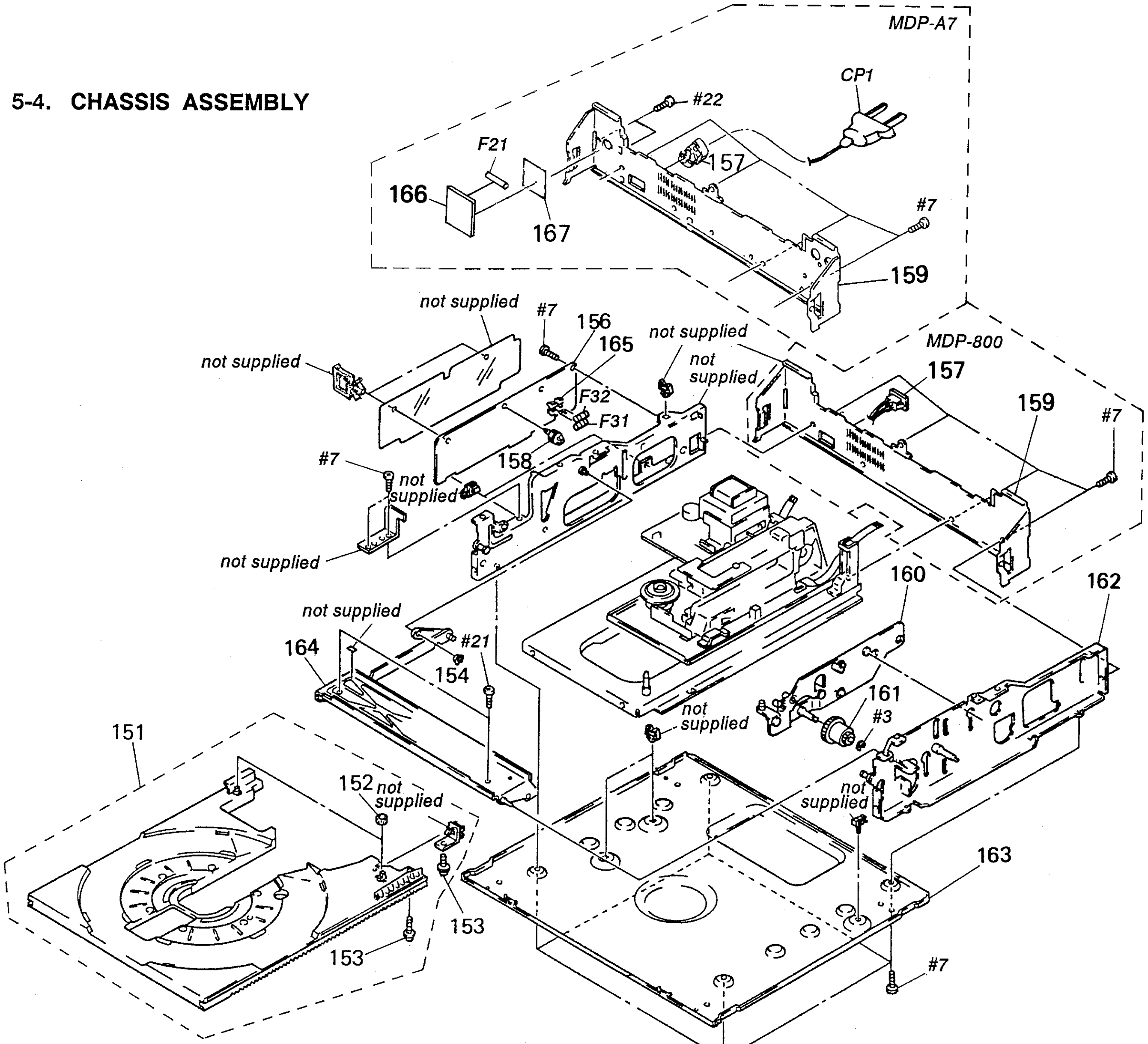
#7
not supplied
111
ND201
101
112
#7
109
105
not supplied
not supplied
M471
116
115
#6
113
117
125
118
120
119
121
122
120
#8
123
#7
124
#3

Ref. No.	Part No.	Description	Remark
* 101	3-954-681-01	RIVET, NYLON	
* 102	A-6423-041-A	FP-722 BOARD, COMPLETE	
103	3-953-325-01	GEAR, PHASE	
104	4-919-393-01	DAMPER	
105	3-950-989-01	NUT (M7), HEXAGON	
107	A-6415-522-A	KNOB BLOCK ASSY (BR)	
* 108	A-6423-044-A	PW-706 BOARD, COMPLETE (800)	
* 108	A-6423-046-A	PW-706 BOARD, COMPLETE (A7)	
* 109	3-684-436-01	PLATE, MOUNT	
110	X-3942-786-1	LINK ASSY, DRIVING	
* 111	A-6423-043-A	MI-703 BOARD, COMPLETE	
* 112	A-6423-042-A	SW-725 BOARD, COMPLETE	
113	3-531-576-11	RIVET	
* 115	A-6421-953-A	MT-702 BOARD, COMPLETE	
* 116	X-3942-805-1	BRACKET ASSY, GEAR	
117	3-570-118-00	CUSHION, MOTOR	
118	3-570-027-00	SCREW, MOTOR	
119	3-953-358-01	GEAR, MIDWAY	
120	3-669-595-00	WASHER (2), STOPPER	
121	3-953-394-01	PULLEY (A)	
122	3-953-393-01	BELT, TIMING	
123	3-953-356-01	GEAR, CONTROL	
* 124	3-953-357-01	BRACKET, SW	
* 125	A-6421-954-A	SW-719 BOARD, COMPLETE	
126	3-953-317-01	HOLDER, TUBE, FL	
* 127	A-6423-040-A	HP-713 BOARD, COMPLETE	
M471	X-3942-963-1	MOTOR ASSY	
ND201	1-517-161-11	INDICATOR TUBE, FLUORESCENT	

5-4. CHASSIS ASSEMBLY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F31
#7
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162
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164
#21
154
not supplied
161
#3
151
152 not supplied
not supplied
163
153
153
#7

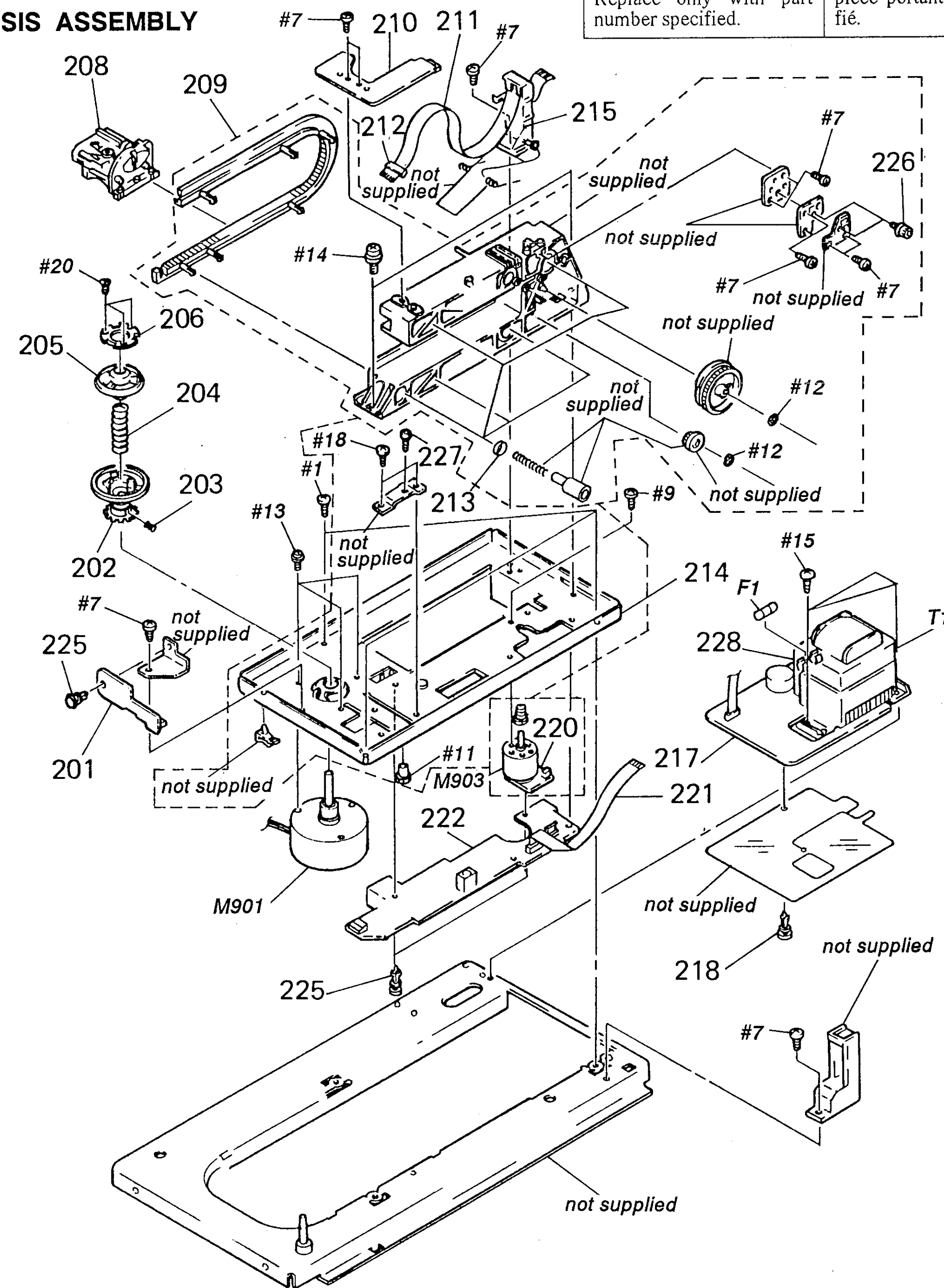
Ref. No.	Part No.	Description	Remark
151	X-3943-255-1	TRAY ASSY (800)	
151	X-3943-292-1	TRAY ASSY (A7)	
* 152	4-914-248-01	STOPPER, RUBBER	
153	3-710-901-11	SCREW, TAPPING	
154	3-703-074-01	CAP 3, SHAFT	
* 156	A-6423-039-A	PS-713 BOARD, COMPLETE (800)	
* 156	A-6423-045-A	PS-713 BOARD, COMPLETE (A7)	
⚠157	1-951-569-11	HARNESS (AC-1) (800)	
⚠157	3-703-244-00	BUSHING (2104), CORD (A7)	
* 158	4-884-834-00	SUPPORT, PC	
* 159	3-953-382-21	PANEL, REAR (800)	
* 159	3-953-382-92	PANEL, REAR (A7)	
160	X-3942-802-1	PLATE ASSY, BASE, LOADING	

Ref. No.	Part No.	Description	Remark
161	3-953-361-01	GEAR, IDLER	
* 162	X-3942-803-1	FRAME (R) ASSY	
163	3-953-383-01	PLATE, BOTTOM	
* 164	X-3942-796-1	FRAME ASSY, TRAY T	
⚠165	1-533-189-11	HOLDER, FUSE	
* 166	A-6423-011-A	VS-706 BOARD, COMPLETE (A7)	
* 167	3-953-821-03	SHEET, INSULATING (A7)	
⚠CP1	1-575-912-21	CORD, POWER (A7)	
⚠F21	1-532-066-00	FUSE, TIME-LAG 0.4A 250V (A7)	
⚠F31	1-532-299-00	FUSE, TIME-LAG 5A 250V (A7)	
⚠F31	1-532-747-11	FUSE, GLASS TUBE 5A 1 25V (800)	
⚠F32	1-532-299-00	FUSE, TIME-LAG 5A 250V (A7)	
⚠F32	1-532-747-11	FUSE, GLASS TUBE 5A 1 25V (800)	

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

5-5. MD CHASSIS ASSEMBLY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F1
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228
220
201
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M903
221
222
M901
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218
225
#7
not supplied

Ref. No.	Part No.	Description	Remark
201	A-6421-957-A	FG-704 BOARD, COMPLETE	
202	X-3942-779-1	TURNTABLE ASSY	
203	3-701-507-00	SET SCREW, DOUBLE POINT, (M3X5)	
204	3-953-289-01	SPRING (3), COMPRESSION	
205	3-953-292-01	GUIDE, CENTER	
206	3-953-293-01	PLATE (C), YOKE	
⚠208	8-848-286-01	DEVICE, OPTICAL KHS-150A	
209	A-6404-082-A	BASE BLOCK ASSY, FEED	
210	A-6421-958-A	BI-702 BOARD, COMPLETE	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
212	3-953-268-01	HOLDER (18P), FLEXIBLE	
213	3-953-830-01	WASHER, U	
* 214	A-6404-074-A	PLATE BLOCK ASSY, BASE	
215	A-6404-076-A	STAND ASSY, FLEXIBLE RETAINER	
* 217	A-6423-010-A	TR-717 BOARD, COMPLETE (A7)	
* 217	A-6423-048-A	TR-717 BOARD, COMPLETE (800)	
218	3-531-576-11	RIVET	
* 220	A-6421-955-A	MT-703 BOARD, COMPLETE	
221	1-751-084-11	CABLE, FLEXIBLE FLAT (14 CORE)	
222	A-6421-956-A	MD-703 BOARD, COMPLETE	
225	3-703-356-00	RIVET, T TYPE	
226	3-899-249-01	BOLT, HEXAGON SOCKET	
227	3-953-829-01	BOLT	
⚠228	1-533-189-11	HOLDER, FUSE	
⚠F1	1-532-215-00	FUSE, TIME-LAG 0.8A 250V (A7)	
⚠F1	1-532-742-11	FUSE, GLASS TUBE 1.6A 125V (800)	
M901	1-698-109-11	MOTOR, DD (SPINDLE)	
M903	X-3942-968-1	TILT MOTOR ASSY	
⚠T1	1-423-522-11	TRANSFORMER, POWER (800)	
⚠T1	1-423-556-11	TRANSFORMER, POWER (A7)	

BI-702 **FG-704**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
	A-6421-958-A	BI-702 BOARD, COMPLETE	
		**********************	
		(Ref. No. 2,000 Series)	
	3-953-261-01	HOLDER, PD	
		< CAPACITOR >	
C401	1-163-035-00	CERAMIC CHIP 0.047uF	50V
		< CONNECTOR >	
CN401	1-506-484-11	PIN, CONNECTOR 5P	
		< DIODE >	
D401	8-729-020-74	DIODE GP1S24	
D402	8-729-020-74	DIODE GP1S24	
		< JUMPER RESISTOR >	
JR401	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR403	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR404	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR405	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< TRANSISTOR >	
Q401	8-729-904-10	TRANSISTOR PT-360FS	
Q402	8-729-904-10	TRANSISTOR PT-360FS	
Q403	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q404	8-729-230-49	TRANSISTOR 2SC2712-YG	
		< RESISTOR >	
R401	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R402	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R403	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R404	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R405	1-216-039-00	METAL CHIP 390 5% 1/10W	
R406	1-216-111-00	METAL CHIP 390K 5% 1/10W	
R407	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R408	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R409	1-216-073-00	METAL CHIP 10K 5% 1/10W	

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Ref. No.	Part No.	Description	Remark
	A-6421-957-A	FG-704 BOARD, COMPLETE	
		**********************	
		(Ref. No. 2,000 Series)	
		< CAPACITOR >	
C411	1-163-035-00	CERAMIC CHIP 0.047uF	50V
		< CONNECTOR >	
CN411	1-691-863-11	CONNECTOR, BOARD TO BOARD	
		< DIODE >	
D411	8-729-020-74	DIODE GP1S24	
D412	8-729-020-74	DIODE GP1S24	
		< JUMPER RESISTOR >	
JR410	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR411	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR412	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< TRANSISTOR >	
Q411	8-729-216-22	TRANSISTOR 2SA1162-G	
Q412	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R411	1-216-037-00	METAL CHIP 330 5% 1/10W	
R412	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R413	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R414	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R415	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R416	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R417	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R418	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R419	1-216-049-00	METAL CHIP 1K 5% 1/10W	

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Ref. No.	Part No.	Description			Remark
*	A-6423-041-A	FP-722 BOARD, COMPLETE			
		**********************			
		(Ref. No. 7,000 Series)			
	3-953-317-01	HOLDER, TUBE, FL			
		< CAPACITOR >			
C201	1-124-589-11	ELECT	47uF	20%	16V
C202	1-124-589-11	ELECT	47uF	20%	16V
C203	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C204	1-126-163-11	ELECT	4.7uF	20%	50V
C205	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C206	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C207	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C208	1-124-248-00	ELECT	22uF	20%	35V
C209	1-126-096-11	ELECT	10uF	20%	35V
C210	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C211	1-124-589-11	ELECT	47uF	20%	16V
C212	1-124-589-11	ELECT	47uF	20%	16V
C213	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C215	1-163-035-00	CERAMIC CHIP	0.047uF		50V
⚠C216	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C217	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C218	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C219	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
⚠C220	1-163-035-00	CERAMIC CHIP	0.047uF		50V
		< CONNECTOR >			
CN201	1-506-483-21	PIN, CONNECTOR 4P			
CN202	1-506-486-11	PIN, CONNECTOR 7P			
* CN203	1-564-018-61	PIN, CONNECTOR 8P			
CN204	1-506-484-11	PIN, CONNECTOR 5P			
CN205	1-506-487-11	PIN, CONNECTOR 8P			
		< DIODE >			
D201	8-719-210-39	DIODE	EC10QS-04		
D202	8-719-978-93	DIODE	DTZ30B-TT11		
D203	8-719-210-39	DIODE	EC10QS-04		
D204	8-719-105-73	DIODE	RD4.7M-B2		
D205	8-719-210-39	DIODE	EC10QS-04		
⚠D206	8-719-400-18	DIODE	MA152WK		
		< FILTER >			
FL201	1-421-927-21	FILTER, NOISE			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC201	8-759-173-23	IC	MB89095PF-G-142		
IC202	8-759-074-40	IC	PST572DMT-T1		
		< COIL >			
L201	1-414-189-31	INDUCTOR 100uH			
L202	1-414-189-31	INDUCTOR 100uH			
		< FLUORESCENT INDICATOR >			
ND201	1-517-161-11	INDICATOR TUBE, FLUORESCENT			
		< TRANSISTOR >			
Q201	8-729-207-69	TRANSISTOR	RN2403		
Q202	8-729-207-69	TRANSISTOR	RN2403		
Q203	8-729-140-97	TRANSISTOR	2SB734-34		
Q204	8-729-216-22	TRANSISTOR	2SA1162-G		
Q209	8-729-207-58	TRANSISTOR	RN1404		
		< RESISTOR >			
R201	1-216-037-00	METAL CHIP	330	5%	1/10W
R202	1-216-037-00	METAL CHIP	330	5%	1/10W
R203	1-216-009-00	METAL CHIP	22	5%	1/10W
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W
R205	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R206	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R207	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R208	1-216-081-00	METAL CHIP	22K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-075-00	METAL CHIP	12K	5%	1/10W
R211	1-216-073-00	METAL CHIP	10K	5%	1/10W
R212	1-216-049-00	METAL CHIP	1K	5%	1/10W
R213	1-216-073-00	METAL CHIP	10K	5%	1/10W
R214	1-216-073-00	METAL CHIP	10K	5%	1/10W
R215	1-216-033-00	METAL CHIP	220	5%	1/10W
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W
R217	1-216-049-00	METAL CHIP	1K	5%	1/10W
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W
R219	1-216-033-00	METAL CHIP	220	5%	1/10W
R220	1-216-033-00	METAL CHIP	220	5%	1/10W
R221	1-216-049-00	METAL CHIP	1K	5%	1/10W
R222	1-216-073-00	METAL CHIP	10K	5%	1/10W
R223	1-216-033-00	METAL CHIP	220	5%	1/10W
R224	1-216-049-00	METAL CHIP	1K	5%	1/10W
R230	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
⚠R233	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R234	1-216-073-00	METAL CHIP	10K	5%	1/10W
⚠R235	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R236	1-216-049-00	METAL CHIP	1K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R237	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R238	1-216-033-00	METAL CHIP 220 5% 1/10W	
R239	1-216-033-00	METAL CHIP 220 5% 1/10W	
R240	1-216-033-00	METAL CHIP 220 5% 1/10W	
⚠R250	1-216-049-00	METAL CHIP 1K 5% 1/10W	
⚠R251	1-216-073-00	METAL CHIP 10K 5% 1/10W	
⚠R252	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R253	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R254	1-216-075-00	METAL CHIP 12K 5% 1/10W	
		< SWITCH >	
S201	1-692-440-11	SWITCH, PUSH (DOOR)	
		< TRANSFORMER >	
T201	1-448-740-21	TRANSFORMER, DC-DC CONVERTER	
		< VIBRATOR >	
X201	1-579-431-11	VIBLATOR, CRYSTAL 32KHz	
X202	1-579-223-11	OSCILLATOR, CERAMIC 8MHz	
**			
*	A-6423-040-A	HP-713 BOARD, COMPLETE ********************** (Ref. No. 5,000 Series)	
		< CAPACITOR >	
C551	1-161-772-11	CERAMIC 0.1uF 10% 25V	
C552	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C553	1-162-294-31	CERAMIC 0.001uF 10% 50V	
		< CONNECTOR >	
CN551	1-506-468-11	PIN, CONNECTOR 3P	
		< DIODE >	
D551	8-719-911-19	DIODE 1SS119	
D552	8-719-911-19	DIODE 1SS119	
		< FERRITE BEAD >	
FB551	1-410-396-41	INDUCTOR 0.45UH	
FB552	1-410-396-41	INDUCTOR 0.45UH	
FB553	1-410-396-41	INDUCTOR 0.45UH	
		< FILTER >	
FL551	1-236-071-11	ENCAPSULATED COMPONENT	
		< JACK >	
J551	1-568-151-21	JACK, LARGE TYPE (PHONES)	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R551	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R552	1-249-399-11	CARBON 33 5% 1/4W	F
R553	1-249-399-11	CARBON 33 5% 1/4W	F
R554	1-249-421-11	CARBON 2.2K 5% 1/4W	F
		< VARIABLE RESISTOR >	
RV551	1-223-191-11	RES, VAR, CARBON 500/500 (PHONES LEVEL)	
**			
*	A-6423-038-A	MB-702 BOARD, COMPLETE (A7) **************************** (Ref. No. 1,000 Series)	
*	A-6423-047-A	MB-702 BOARD, COMPLETE (800) **************************** (Ref. No. 1,000 Series)	
	3-954-678-01	SHIELD (UPPER), MB	
	9-911-839-XX	CUSHION	
		< CAPACITOR >	
C001	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C002	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C003	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C004	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C005	1-124-126-00	ELECT 47uF 20% 16V	
C006	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C007	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	
C008	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C009	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C010	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C011	1-126-177-11	ELECT 100uF 20% 10V	
C012	1-126-177-11	ELECT 100uF 20% 10V	
C013	1-126-177-11	ELECT 100uF 20% 10V	
C014	1-163-241-11	CERAMIC CHIP 39PF 5% 50V	
C015	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C016	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C017	1-163-229-11	CERAMIC CHIP 12PF 5% 50V	
C018	1-126-177-11	ELECT 100uF 20% 10V	
C019	1-126-154-11	ELECT 47uF 20% 6.3V	
C020	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C021	1-126-157-11	ELECT 10uF 20% 16V	
C022	1-126-157-11	ELECT 10uF 20% 16V	
C023	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C024	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C025	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C026	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C027	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C028	1-163-031-11	CERAMIC CHIP 0.01uF 50V	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C029	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C030	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C031	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C032	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C033	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C034	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C035	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C036	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C037	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C038	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C039	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C040	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C041	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C042	1-126-177-11	ELECT	100uF	20%	10V
C043	1-124-903-11	ELECT	1uF	20%	50V
C044	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C045	1-124-903-11	ELECT	1uF	20%	50V
C046	1-126-177-11	ELECT	100uF	20%	10V
C047	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C048	1-163-096-00	CERAMIC CHIP	13PF	5%	50V
C049	1-126-177-11	ELECT	100uF	20%	10V
C051	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C052	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C053	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C054	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C055	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C056	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C057	1-126-154-11	ELECT	47uF	20%	6.3V
C058	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C059	1-126-157-11	ELECT	10uF	20%	16V
C060	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C061	1-126-177-11	ELECT	100uF	20%	10V
C062	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C064	1-126-177-11	ELECT	100uF	20%	10V
C065	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C066	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C068	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C069	1-126-177-11	ELECT	100uF	20%	10V
C070	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C071	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C072	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C073	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C074	1-126-177-11	ELECT	100uF	20%	10V
C075	1-162-219-31	CERAMIC	68PF	5%	50V
C075	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C076	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C078	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C079	1-163-031-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C080	1-126-177-11	ELECT	100uF	20%	10V
C081	1-126-177-11	ELECT	100uF	20%	10V
C082	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C083	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C084	1-126-177-11	ELECT	100uF	20%	10V
C088	1-164-346-11	CERAMIC CHIP	1uF		16V
C095	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C096	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C097	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C099	1-124-126-00	ELECT	47uF	20%	16V
C100	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C101	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C102	1-124-126-00	ELECT	47uF	20%	16V
C103	1-124-464-11	ELECT	0.22uF	20%	50V
C104	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C105	1-124-589-11	ELECT	47uF	20%	16V
C106	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C107	1-124-126-00	ELECT	47uF	20%	16V
C108	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C109	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C110	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C111	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C112	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C113	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C114	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C115	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C116	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C117	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C118	1-126-177-11	ELECT	100uF	20%	10V
C119	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C120	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C121	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C122	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C125	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C126	1-124-257-00	ELECT	2.2uF	20%	50V
C127	1-124-257-00	ELECT	2.2uF	20%	50V
C128	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C129	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C130	1-126-177-11	ELECT	100uF	20%	10V
C131	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C133	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C134	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C135	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C136	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C137	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C138	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C139	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C140	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-00	CERAMIC CHIP	0.1uF		25V

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Ref. No.	Part No.	Description		Remark	
C142	1-126-177-11	ELECT	100uF	20%	10V
C143	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C144	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C145	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C146	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C147	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C148	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C149	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C150	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C151	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C155	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C156	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C157	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C158	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C160	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C162	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C163	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C164	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C165	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C170	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C171	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C172	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C173	1-124-903-11	ELECT	1uF	20%	50V
C174	1-164-346-11	CERAMIC CHIP	1uF		16V
C175	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C176	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C201	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C202	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C203	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C204	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C205	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C206	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C207	1-124-126-00	ELECT	47uF	20%	16V
C208	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C209	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C210	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C211	1-124-126-00	ELECT	47uF	20%	16V
C212	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C213	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C214	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C215	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C216	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C217	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C218	1-124-126-00	ELECT	47uF	20%	16V
C219	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C220	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C221	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C222	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C223	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C224	1-126-177-11	ELECT	100uF	20%	10V
C225	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C226	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V
C227	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C228	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C229	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C230	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C231	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C232	1-124-126-00	ELECT	47uF	20%	16V
C233	1-124-927-11	ELECT	4.7uF	20%	100V
C234	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C235	1-124-126-00	ELECT	47uF	20%	16V
C236	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C238	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C239	1-124-287-00	ELECT	10uF	20%	10V
C240	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C241	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C242	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C243	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C244	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C245	1-124-126-00	ELECT	47uF	20%	16V
C246	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C247	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C248	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C249	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C250	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C251	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C252	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C253	1-124-126-00	ELECT	47uF	20%	16V
C254	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C255	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C256	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C257	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C258	1-104-547-11	FILM CHIP	0.0047uF	5%	16V
C259	1-104-540-11	FILM CHIP	0.0012uF	5%	50V
C260	1-104-547-11	FILM CHIP	0.0047uF	5%	16V
C261	1-104-540-11	FILM CHIP	0.0012uF	5%	50V
C262	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C263	1-130-495-00	MYLAR	0.1uF	5%	50V
C264	1-130-495-00	MYLAR	0.1uF	5%	50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C266	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C267	1-130-495-00	MYLAR	0.1uF	5%	50V
C268	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C269	1-130-495-00	MYLAR	0.1uF	5%	50V
C270	1-126-022-11	ELECT	47uF	20%	16V
C271	1-126-022-11	ELECT	47uF	20%	16V
C272	1-163-031-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C273	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C274	1-126-022-11	ELECT	47uF	20%	16V
C275	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C276	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C277	1-126-022-11	ELECT	47uF	20%	16V
C278	1-126-022-11	ELECT	47uF	20%	16V
C279	1-126-022-11	ELECT	47uF	20%	16V
C280	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C281	1-124-126-00	ELECT	47uF	20%	16V
C282	1-124-126-00	ELECT	47uF	20%	16V
C283	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C289	1-124-126-00	ELECT	47uF	20%	16V
C290	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C291	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C292	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C293	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C294	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C295	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C296	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C297	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C298	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C299	1-126-947-11	ELECT	47uF	20%	35V
C300	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C302	1-126-177-11	ELECT	100uF	20%	10V
C303	1-126-177-11	ELECT	100uF	20%	10V
C307	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C308	1-124-927-11	ELECT	4. 7uF	20%	100V
C327	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C329	1-124-903-11	ELECT	1uF	20%	50V
C330	1-124-903-11	ELECT	1uF	20%	50V
C331	1-104-541-11	FILM CHIP	0. 0015uF	5%	50V
C332	1-104-541-11	FILM CHIP	0. 0015uF	5%	50V
C333	1-104-541-11	FILM CHIP	0. 0015uF	5%	50V
C334	1-104-541-11	FILM CHIP	0. 0015uF	5%	50V
C335	1-124-997-11	ELECT	470uF	20%	10V
C399	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C401	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C402	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C403	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C405	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C407	1-124-277-11	ELECT	4. 7uF	20%	35V
C408	1-163-022-00	CERAMIC CHIP	0. 012uF	10%	50V
C409	1-163-024-00	CERAMIC CHIP	0. 018uF	10%	50V
C410	1-164-489-11	CERAMIC CHIP	0. 22uF	10%	16V
C411	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
C413	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V
C414	1-124-767-00	ELECT	2. 2uF	20%	50V
C415	1-163-014-00	CERAMIC CHIP	0. 0027uF	5%	50V
C416	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C417	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C419	1-164-161-11	CERAMIC CHIP	0. 0022uF	10%	50V
C420	1-137-375-11	FILM	0. 068uF	5%	50V
C421	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C422	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C423	1-124-287-00	ELECT	10uF	20%	10V
C424	1-163-809-11	CERAMIC CHIP	0. 047uF	10%	25V
C425	1-124-273-00	ELECT	3. 3uF	20%	50V
C427	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C428	1-126-947-11	ELECT	47uF	20%	35V
C429	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C430	1-126-947-11	ELECT	47uF	20%	35V
C432	1-163-022-00	CERAMIC CHIP	0. 012uF	10%	50V
C433	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C434	1-163-024-00	CERAMIC CHIP	0. 018uF	10%	50V
C435	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C436	1-163-017-00	CERAMIC CHIP	0. 0047uF	5%	50V
C437	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C438	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C439	1-124-126-00	ELECT	47uF	20%	16V
C440	1-124-126-00	ELECT	47uF	20%	16V
C441	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C442	1-164-505-11	CERAMIC CHIP	2. 2uF		16V
C443	1-164-505-11	CERAMIC CHIP	2. 2uF		16V
C444	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C448	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C449	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C465	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C466	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C467	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C468	1-164-182-11	CERAMIC CHIP	0. 0033uF	10%	50V
C469	1-163-222-11	CERAMIC CHIP	5PF	0. 25PF	50V
C491	1-137-378-11	FILM	0. 22uF	5%	50V
C501	1-124-631-11	ELECT	47uF	20%	16V
C502	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C503	1-124-277-11	ELECT	4. 7uF	20%	35V
C504	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C505	1-164-182-11	CERAMIC CHIP	0. 0033uF	10%	50V
C506	1-124-927-11	ELECT	4. 7uF	20%	100V
C507	1-126-947-11	ELECT	47uF	20%	35V
C508	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C509	1-126-177-11	ELECT	100uF	20%	10V
C510	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C511	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C512	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C513	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C514	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C515	1-164-232-11	CERAMIC CHIP	0. 01uF		50V

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Ref. No.	Part No.	Description	Remark
C516	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C517	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C518	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C519	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C520	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C523	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C524	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C701	1-126-916-11	ELECT 1000uF 20% 6.3V	
C702	1-126-916-11	ELECT 1000uF 20% 6.3V	
C703	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C704	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C706	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C707	1-126-948-11	ELECT 100uF 20% 35V	
C708	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C709	1-164-693-11	CERAMIC CHIP 0.0018uF 5% 50V	
C710	1-124-927-11	ELECT 4.7uF 20% 100V	
C711	1-126-916-11	ELECT 1000uF 20% 6.3V	
C712	1-126-916-11	ELECT 1000uF 20% 6.3V	
C718	1-126-948-11	ELECT 100uF 20% 35V	
C801	1-163-129-00	CERAMIC CHIP 330PF 5% 50V	
C802	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
		< CONNECTOR >	
* CN101	1-568-786-11	PIN, CONNECTOR 9P	
* CN102	1-568-790-11	PIN, CONNECTOR 13P	
* CN103	1-568-779-11	PIN, CONNECTOR 2P	
* CN104	1-568-779-11	PIN, CONNECTOR 2P	
CN201	1-506-468-11	PIN, CONNECTOR 3P	
CN203	1-506-470-11	PIN, CONNECTOR 5P	
CN206	1-506-469-11	PIN, CONNECTOR 4P	
CN401	1-750-687-11	HOUSING, CONNECTOR (PC BOARD)	
CN402	1-750-505-11	CONNECTOR, FPC 18P	
* CN403	1-691-503-11	CONNECTOR, FPC 14P	
CN501	1-506-468-11	PIN, CONNECTOR 3P	
CN502	1-506-469-11	PIN, CONNECTOR 4P	
CN503	1-506-472-11	PIN, CONNECTOR 7P	
CN504	1-506-473-11	PIN, CONNECTOR 8P	
CN505	1-506-473-11	PIN, CONNECTOR 8P	
* CN702	1-568-788-21	PIN, CONNECTOR 11P	
		< TRIMMER >	
CT001	1-141-442-91	TRIMMER, CERAMIC	
		< DIODE >	
D002	8-719-988-62	DIODE 1SS355	
D003	8-719-988-62	DIODE 1SS355	
D004	8-719-988-62	DIODE 1SS355	
D006	8-719-400-18	DIODE MA152WK	
D201	8-719-032-05	DIODE KV1460TL00	
D202	8-719-400-18	DIODE MA152WK	
D203	8-719-104-34	DIODE 1S2836	
D205	8-719-104-34	DIODE 1S2836	
D206	8-719-104-34	DIODE 1S2836	
D207	8-719-032-05	DIODE KV1460TL00	
D208	8-719-104-34	DIODE 1S2836	
D209	8-719-401-92	DIODE MA3082M-TX	
D210	8-719-104-34	DIODE 1S2836	
D213	8-719-400-18	DIODE MA152WK	
D401	8-719-800-76	DIODE 1SS226	
D402	8-719-800-76	DIODE 1SS226	
D405	8-719-988-62	DIODE 1SS355	
D407	8-719-800-76	DIODE 1SS226	
D502	8-719-402-34	DIODE MA3120-TX	
D503	8-719-104-34	DIODE 1S2836	
D504	8-719-400-75	DIODE MA3091	
D506	8-719-104-34	DIODE 1S2836	
D507	8-719-104-34	DIODE 1S2836	
D703	8-719-210-39	DIODE EC10QS-04	
D704	8-719-210-39	DIODE EC10QS-04	
		< FERRITE BEAD >	
FB203	1-412-390-21	INDUCTOR CHIP 0uH	
FB204	1-412-390-21	INDUCTOR CHIP 0uH	
FB205	1-412-390-21	INDUCTOR CHIP 0uH	
FB206	1-412-390-21	INDUCTOR CHIP 0uH	
FB207	1-412-390-21	INDUCTOR CHIP 0uH	
FB208	1-412-390-21	INDUCTOR CHIP 0uH	
FB209	1-412-390-21	INDUCTOR CHIP 0uH	
FB211	1-216-296-00	METAL CHIP 0 5% 1/8W	
FB212	1-410-370-31	INDUCTOR CHIP 1.2UH	
FB501	1-543-775-11	FILTER, EMI	
FB502	1-543-775-11	FILTER, EMI	
FB503	1-543-775-11	FILTER, EMI	
FB504	1-412-390-21	INDUCTOR CHIP 0uH	
FB505	1-412-390-21	INDUCTOR CHIP 0uH	
FB506	1-412-390-21	INDUCTOR CHIP 0uH	
FB507	1-412-390-21	INDUCTOR CHIP 0uH	
FB508	1-543-775-11	FILTER, EMI	
		< FILTER >	
FL001	1-239-319-11	FILTER, LOW PASS	
FL002	1-236-843-11	FILTER, BAND PASS	
FL005	1-239-557-11	LPF (5.5MHZ)	
FL006	1-236-071-11	ENCAPSULATED COMPONENT	
FL007	1-577-543-11	FILTER, CERAMIC	

Ref. No.	Part No.	Description	Remark
FL008	1-577-543-11	FILTER, CERAMIC	
FL009	1-577-543-11	FILTER, CERAMIC	
FL010	1-236-071-11	ENCAPSULATED COMPONENT	
FL011	1-236-071-11	ENCAPSULATED COMPONENT	
FL012	1-236-071-11	ENCAPSULATED COMPONENT	
FL013	1-236-071-11	ENCAPSULATED COMPONENT	
FL014	1-236-071-11	ENCAPSULATED COMPONENT	
FL015	1-236-071-11	ENCAPSULATED COMPONENT	
FL201	1-236-071-11	ENCAPSULATED COMPONENT	
FL202	1-236-071-11	ENCAPSULATED COMPONENT	
FL203	1-236-071-11	ENCAPSULATED COMPONENT	
FL204	1-236-071-11	ENCAPSULATED COMPONENT	
FL205	1-236-071-11	ENCAPSULATED COMPONENT	
FL207	1-236-071-11	ENCAPSULATED COMPONENT	
FL208	1-236-840-11	FILTER, BAND PASS	
FL209	1-236-071-11	ENCAPSULATED COMPONENT	
FL210	1-236-071-11	ENCAPSULATED COMPONENT	
FL213	1-236-744-21	FILTER, EMI	
FL214	1-236-744-21	FILTER, EMI	
FL215	1-236-744-21	FILTER, EMI	
FL216	1-236-744-21	FILTER, EMI	
FL401	1-235-922-11	FILTER, LOW PASS (1.7MHz)	
FL501	1-236-744-21	FILTER, EMI	

< IC >

Ref. No.	Part No.	Description	Remark
IC001	8-759-160-72	IC CXA8020AQ	
IC003	8-759-063-26	IC CXD8405Q	
IC004	8-759-098-80	IC MB90085-123-EF	
IC005	8-759-063-27	IC CXD8404Q	
IC007	8-759-927-46	IC SN74HC00ANS	
IC201	8-749-921-12	IC GP1F32T	
IC202	8-759-924-46	IC BA4560F	
IC203	8-759-098-82	IC YM7110	
IC204	8-752-342-65	IC CXD2560M	
IC205	8-759-924-46	IC BA4560F	
IC206	8-759-164-56	IC YSD221-ME2	
IC207	8-759-996-43	IC RC4558PS	
IC208	8-752-352-93	IC CXD2500BQ	
IC209	8-759-996-43	IC RC4558PS	
IC210	8-759-924-46	IC BA4560F	
IC211	8-759-996-43	IC RC4558PS	
IC212	8-759-996-43	IC RC4558PS	
IC213	8-759-996-43	IC RC4558PS	
IC214	8-752-351-19	IC CXD2561BM	
IC215	8-759-242-66	IC TC4W66F	
IC220	8-759-604-35	IC M5F78M05	
IC222	8-759-031-84	IC SC7S04F	
IC223	8-759-083-94	IC TC7W74FU	
IC401	8-752-067-81	IC CXA1632AQ	
⚠IC402	8-759-048-30	IC LA6510L	
IC403	8-759-300-71	IC HD14053BFP	
IC404	8-759-300-71	IC HD14053BFP	
IC405	8-759-983-74	IC LM324NS	
IC406	8-759-996-43	IC RC4558PS	
IC407	8-759-996-43	IC RC4558PS	
IC409	8-759-996-43	IC RC4558PS	
IC410	8-759-242-64	IC TC4W53F	
IC501	8-759-173-22	IC MB89094PF-G-110	
IC502	8-759-098-78	IC MB606F06	
IC503	8-759-231-92	IC TA7291P	
IC504	8-759-983-74	IC LM324NS	
IC505	8-759-009-06	IC MC14052BF	
IC506	8-759-300-71	IC HD14053BFP	
⚠IC701	8-759-946-09	IC FA7611M	

< JACK >

Ref. No.	Part No.	Description	Remark
J001	1-750-503-21	CONNECTOR, ROUND TYPE (S VIDEO 1/2)	
* J201	1-565-351-71	JACK, PIN 3P (LINE OUT 1)	
* J202	1-565-351-71	JACK, PIN 3P (LINE OUT 2)	
J501	1-507-678-00	JACK (CONTROL S IN)	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR018	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR200	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR203	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR207	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR208	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR401	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR502	1-216-295-00	METAL CHIP 0 5% 1/10W	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-414-186-31	INDUCTOR 33uH	
L002	1-414-185-41	INDUCTOR 22uH	
L003	1-414-184-41	INDUCTOR 15uH	
L004	1-408-414-00	INDUCTOR 27uH	
L005	1-414-186-31	INDUCTOR 33uH	
L006	1-414-186-31	INDUCTOR 33uH	
L007	1-410-423-11	INDUCTOR 22uH	
L008	1-414-186-31	INDUCTOR 33uH	
L009	1-410-381-11	INDUCTOR CHIP 10uH	
L010	1-410-381-11	INDUCTOR CHIP 10uH	
L011	1-414-186-31	INDUCTOR 33uH	
L013	1-414-186-31	INDUCTOR 33uH	
L018	1-410-391-11	INDUCTOR CHIP 68uH	
L020	1-408-412-00	INDUCTOR 18uH	
L201	1-414-189-31	INDUCTOR 100uH	
L202	1-414-187-11	INDUCTOR 47uH	

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Ref.No.	Part No.	Description	Remark
L203	1-408-418-00	INDUCTOR 56uH	
L204	1-414-180-11	INDUCTOR 3.3uH	
L401	1-414-183-41	INDUCTOR 10uH	
L402	1-414-183-41	INDUCTOR 10uH	
L403	1-414-183-41	INDUCTOR 10uH	
L404	1-414-183-41	INDUCTOR 10uH	
L501	1-414-183-41	INDUCTOR 10uH	
L502	1-408-765-21	INDUCTOR CHIP 1uH	
L701	1-424-219-21	COIL, CHOKE 300uH	
L702	1-410-339-11	COIL, CHOKE 10uH	
L703	1-414-183-41	INDUCTOR 10uH	
L704	1-424-219-11	COIL, CHOKE 300uH	
L705	1-410-339-11	COIL, CHOKE 10uH	
		< TRANSISTOR >	
Q001	8-729-216-22	TRANSISTOR 2SA1162-G	
Q002	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q003	8-729-216-22	TRANSISTOR 2SA1162-G	
Q004	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q005	8-729-207-58	TRANSISTOR RN1404	
Q006	8-729-216-22	TRANSISTOR 2SA1162-G	
Q007	8-729-216-22	TRANSISTOR 2SA1162-G	
Q008	8-729-900-53	TRANSISTOR DTC114EK	
Q009	8-729-216-22	TRANSISTOR 2SA1162-G	
Q010	8-729-216-22	TRANSISTOR 2SA1162-G	
Q011	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q012	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q013	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q014	8-729-216-22	TRANSISTOR 2SA1162-G	
Q015	8-729-216-22	TRANSISTOR 2SA1162-G	
Q016	8-729-216-22	TRANSISTOR 2SA1162-G	
Q017	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q018	8-729-216-22	TRANSISTOR 2SA1162-G	
Q019	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q020	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q023	8-729-216-22	TRANSISTOR 2SA1162-G	
Q024	8-729-216-22	TRANSISTOR 2SA1162-G	
Q025	8-729-216-22	TRANSISTOR 2SA1162-G	
Q026	8-729-216-22	TRANSISTOR 2SA1162-G	
Q027	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q028	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q030	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q031	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q032	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q033	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q034	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q035	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q039	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q040	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q041	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q042	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q201	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q202	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q203	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q204	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q205	8-729-207-68	TRANSISTOR RN2402	
Q206	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q207	8-729-202-38	TRANSISTOR 2SC3326N	
Q208	8-729-202-38	TRANSISTOR 2SC3326N	
Q209	8-729-202-38	TRANSISTOR 2SC3326N	
Q210	8-729-202-38	TRANSISTOR 2SC3326N	
Q211	8-729-202-38	TRANSISTOR 2SC3326N	
Q212	8-729-202-38	TRANSISTOR 2SC3326N	
Q213	8-729-202-38	TRANSISTOR 2SC3326N	
Q214	8-729-202-38	TRANSISTOR 2SC3326N	
Q215	8-729-207-68	TRANSISTOR RN2402	
Q217	8-729-207-68	TRANSISTOR RN2402	
Q218	8-729-207-58	TRANSISTOR RN1404	
Q219	8-729-207-68	TRANSISTOR RN2402	
Q220	8-729-207-58	TRANSISTOR RN1404	
Q221	8-729-207-58	TRANSISTOR RN1404	
Q225	8-729-202-38	TRANSISTOR 2SC3326N	
Q226	8-729-202-38	TRANSISTOR 2SC3326N	
Q401	8-729-216-22	TRANSISTOR 2SA1162-G	
Q403	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q404	8-729-209-15	TRANSISTOR 2SD2012	
Q405	8-729-209-15	TRANSISTOR 2SD2012	
Q406	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q408	8-729-207-70	TRANSISTOR RN2404	
Q409	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q410	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q411	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q501	8-729-216-22	TRANSISTOR 2SA1162-G	
Q502	8-729-207-69	TRANSISTOR RN2403	
Q503	8-729-207-69	TRANSISTOR RN2403	
Q504	8-729-207-69	TRANSISTOR RN2403	
Q505	8-729-230-49	TRANSISTOR 2SC2712-YG	
⚠Q701	8-729-019-29	TRANSISTOR 2SB1009R	
⚠Q702	8-729-019-29	TRANSISTOR 2SB1009R	
		< RESISTOR >	
R001	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R002	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R003	1-216-047-00	METAL CHIP 820 5% 1/10W	
R004	1-216-043-00	METAL CHIP 560 5% 1/10W	
R005	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R006	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	

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Ref. No.	Part No.	Description				Remark
R007	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R008	1-216-035-00	METAL CHIP	270	5%	1/10W	
R009	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R010	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R011	1-216-064-00	METAL CHIP	4.3K	5%	1/10W	
R012	1-216-045-00	METAL CHIP	680	5%	1/10W	
R013	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R014	1-216-295-00	METAL CHIP	0	5%	1/10W	
R015	1-216-041-00	METAL CHIP	470	5%	1/10W	
R016	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R017	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R018	1-216-062-00	METAL CHIP	3.6K	5%	1/10W	
R019	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R020	1-216-037-00	METAL CHIP	330	5%	1/10W	
R021	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R022	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R023	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R024	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R025	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R026	1-216-295-00	METAL CHIP	0	5%	1/10W	
R027	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R028	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R029	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R030	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R031	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R032	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R033	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R034	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R035	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R036	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R037	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R038	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R039	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R040	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R041	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R042	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R043	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R044	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R045	1-216-041-00	METAL CHIP	470	5%	1/10W	
R046	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R047	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R048	1-216-045-00	METAL CHIP	680	5%	1/10W	
R049	1-216-045-00	METAL CHIP	680	5%	1/10W	
R050	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R051	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R052	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R053	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R054	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R055	1-216-049-00	METAL CHIP	1K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R056	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R057	1-216-045-00	METAL CHIP	680	5%	1/10W	
R058	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R059	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R060	1-216-041-00	METAL CHIP	470	5%	1/10W	
R061	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R062	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R063	1-216-031-00	METAL CHIP	180	5%	1/10W	
R064	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R065	1-216-031-00	METAL CHIP	180	5%	1/10W	
R066	1-216-674-11	METAL CHIP	9.1K	0.5%	1/10W	
R067	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R068	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R069	1-216-033-00	METAL CHIP	220	5%	1/10W	
R070	1-216-037-00	METAL CHIP	330	5%	1/10W	
R071	1-216-693-11	METAL CHIP	56K	0.5%	1/10W	
R072	1-216-295-00	METAL CHIP	0	5%	1/10W	
R073	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R074	1-216-037-00	METAL CHIP	330	5%	1/10W	
R075	1-216-041-00	METAL CHIP	470	5%	1/10W	
R076	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R077	1-216-041-00	METAL CHIP	470	5%	1/10W	
R078	1-216-041-00	METAL CHIP	470	5%	1/10W	
R079	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R080	1-216-046-00	METAL CHIP	750	5%	1/10W	
R081	1-216-041-00	METAL CHIP	470	5%	1/10W	
R082	1-216-047-00	METAL CHIP	820	5%	1/10W	
R083	1-216-041-00	METAL CHIP	470	5%	1/10W	
R084	1-216-041-00	METAL CHIP	470	5%	1/10W	
R085	1-216-041-00	METAL CHIP	470	5%	1/10W	
R087	1-216-041-00	METAL CHIP	470	5%	1/10W	
R088	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R089	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R090	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R091	1-216-295-00	METAL CHIP	0	5%	1/10W	
R092	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R093	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R095	1-216-041-00	METAL CHIP	470	5%	1/10W	
R096	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R097	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R098	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R100	1-216-039-00	METAL CHIP	390	5%	1/10W	
R101	1-216-041-00	METAL CHIP	470	5%	1/10W	
R102	1-216-041-00	METAL CHIP	470	5%	1/10W	
R103	1-216-041-00	METAL CHIP	470	5%	1/10W	
R104	1-216-041-00	METAL CHIP	470	5%	1/10W	
R105	1-216-041-00	METAL CHIP	470	5%	1/10W	
R106	1-216-041-00	METAL CHIP	470	5%	1/10W	
R107	1-216-047-00	METAL CHIP	820	5%	1/10W	

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Ref. No.	Part No.	Description				Remark
R108	1-216-041-00	METAL CHIP	470	5%	1/10W	
R109	1-216-041-00	METAL CHIP	470	5%	1/10W	
R110	1-216-295-00	METAL CHIP	0	5%	1/10W	
R111	1-216-295-00	METAL CHIP	0	5%	1/10W	
R112	1-216-037-00	METAL CHIP	330	5%	1/10W	
R113	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R114	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R115	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R116	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R117	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R118	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R119	1-216-037-00	METAL CHIP	330	5%	1/10W	
R120	1-216-031-00	METAL CHIP	180	5%	1/10W	
R121	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R122	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R123	1-216-031-00	METAL CHIP	180	5%	1/10W	
R124	1-216-031-00	METAL CHIP	180	5%	1/10W	
R125	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R126	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R127	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R128	1-216-037-00	METAL CHIP	330	5%	1/10W	
R129	1-216-043-00	METAL CHIP	560	5%	1/10W	
R130	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R131	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R132	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R133	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R134	1-216-043-00	METAL CHIP	560	5%	1/10W	
R135	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R136	1-216-041-00	METAL CHIP	470	5%	1/10W	
R138	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R139	1-216-041-00	METAL CHIP	470	5%	1/10W	
R140	1-216-029-00	METAL CHIP	150	5%	1/10W	
R141	1-216-041-00	METAL CHIP	470	5%	1/10W	
R142	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R144	1-216-295-00	METAL CHIP	0	5%	1/10W	
R145	1-216-025-00	METAL CHIP	100	5%	1/10W	
R146	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R147	1-216-021-00	METAL CHIP	68	5%	1/10W	
R148	1-216-021-00	METAL CHIP	68	5%	1/10W	
R149	1-216-041-00	METAL CHIP	470	5%	1/10W	
R150	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R151	1-216-041-00	METAL CHIP	470	5%	1/10W	
R152	1-216-041-00	METAL CHIP	470	5%	1/10W	
R153	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R154	1-216-041-00	METAL CHIP	470	5%	1/10W	
R155	1-216-021-00	METAL CHIP	68	5%	1/10W	
R156	1-216-021-00	METAL CHIP	68	5%	1/10W	
R157	1-216-041-00	METAL CHIP	470	5%	1/10W	
R158	1-216-021-00	METAL CHIP	68	5%	1/10W	
R159	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R161	1-216-021-00	METAL CHIP	68	5%	1/10W	
R163	1-216-047-00	METAL CHIP	820	5%	1/10W	
R164	1-216-021-00	METAL CHIP	68	5%	1/10W	
R165	1-216-041-00	METAL CHIP	470	5%	1/10W	
R166	1-216-041-00	METAL CHIP	470	5%	1/10W	
R167	1-216-021-00	METAL CHIP	68	5%	1/10W	
R168	1-216-021-00	METAL CHIP	68	5%	1/10W	
R169	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R170	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R171	1-216-021-00	METAL CHIP	68	5%	1/10W	
R172	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R176	1-216-041-00	METAL CHIP	470	5%	1/10W	
R184	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R186	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R187	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R188	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R189	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R190	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R191	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R192	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R194	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R195	1-216-041-00	METAL CHIP	470	5%	1/10W	
R196	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R197	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R198	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R201	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R202	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R203	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R204	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R205	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R208	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R210	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R211	1-216-074-00	METAL CHIP	11K	5%	1/10W	
R212	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R213	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R214	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R215	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R216	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R217	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R218	1-216-047-00	METAL CHIP	820	5%	1/10W	
R219	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R220	1-216-013-00	METAL CHIP	33	5%	1/10W	
R221	1-216-013-00	METAL CHIP	33	5%	1/10W	

Ref. No.	Part No.	Description			Remark
R222	1-216-047-00	METAL CHIP	820	5%	1/10W
R223	1-216-049-00	METAL CHIP	1K	5%	1/10W
R224	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R225	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R226	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R227	1-216-017-00	METAL CHIP	47	5%	1/10W
R228	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R229	1-216-021-00	METAL CHIP	68	5%	1/10W
R230	1-216-041-00	METAL CHIP	470	5%	1/10W
R231	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R232	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R233	1-216-049-00	METAL CHIP	1K	5%	1/10W
R235	1-216-049-00	METAL CHIP	1K	5%	1/10W
R236	1-216-041-00	METAL CHIP	470	5%	1/10W
R237	1-216-073-00	METAL CHIP	10K	5%	1/10W
R238	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R239	1-216-033-00	METAL CHIP	220	5%	1/10W
R240	1-216-025-00	METAL CHIP	100	5%	1/10W
R241	1-216-025-00	METAL CHIP	100	5%	1/10W
R242	1-216-295-00	METAL CHIP	0	5%	1/10W
R243	1-216-037-00	METAL CHIP	330	5%	1/10W
R244	1-216-037-00	METAL CHIP	330	5%	1/10W
R245	1-216-037-00	METAL CHIP	330	5%	1/10W
R246	1-216-037-00	METAL CHIP	330	5%	1/10W
R247	1-216-049-00	METAL CHIP	1K	5%	1/10W
R248	1-216-073-00	METAL CHIP	10K	5%	1/10W
R249	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R250	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R251	1-216-073-00	METAL CHIP	10K	5%	1/10W
R252	1-216-085-00	METAL CHIP	33K	5%	1/10W
R253	1-216-085-00	METAL CHIP	33K	5%	1/10W
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R255	1-216-095-00	METAL CHIP	82K	5%	1/10W
R256	1-216-121-00	METAL CHIP	1M	5%	1/10W
R257	1-216-097-00	METAL CHIP	100K	5%	1/10W
R258	1-216-049-00	METAL CHIP	1K	5%	1/10W
R259	1-216-097-00	METAL CHIP	100K	5%	1/10W
R260	1-216-049-00	METAL CHIP	1K	5%	1/10W
R261	1-216-073-00	METAL CHIP	10K	5%	1/10W
R262	1-216-097-00	METAL CHIP	100K	5%	1/10W
R263	1-216-049-00	METAL CHIP	1K	5%	1/10W
R264	1-216-037-00	METAL CHIP	330	5%	1/10W
R265	1-216-037-00	METAL CHIP	330	5%	1/10W
R266	1-216-037-00	METAL CHIP	330	5%	1/10W
R267	1-216-025-00	METAL CHIP	100	5%	1/10W
R268	1-216-049-00	METAL CHIP	1K	5%	1/10W
R269	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R270	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R271	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R272	1-216-077-00	METAL CHIP	15K	5%	1/10W
R273	1-216-077-00	METAL CHIP	15K	5%	1/10W
R274	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R275	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R276	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R277	1-216-091-00	METAL CHIP	56K	5%	1/10W
R278	1-216-091-00	METAL CHIP	56K	5%	1/10W
R279	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R280	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R281	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R282	1-216-077-00	METAL CHIP	15K	5%	1/10W
R283	1-216-077-00	METAL CHIP	15K	5%	1/10W
R284	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R285	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R286	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R287	1-216-091-00	METAL CHIP	56K	5%	1/10W
R288	1-216-091-00	METAL CHIP	56K	5%	1/10W
R289	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R290	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R291	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R292	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R293	1-216-105-00	METAL CHIP	220K	5%	1/10W
R294	1-216-049-00	METAL CHIP	1K	5%	1/10W
R295	1-216-049-00	METAL CHIP	1K	5%	1/10W
R296	1-216-105-00	METAL CHIP	220K	5%	1/10W
R297	1-216-049-00	METAL CHIP	1K	5%	1/10W
R298	1-216-049-00	METAL CHIP	1K	5%	1/10W
R299	1-216-047-00	METAL CHIP	820	5%	1/10W
R300	1-216-033-00	METAL CHIP	220	5%	1/10W
R301	1-216-073-00	METAL CHIP	10K	5%	1/10W
R302	1-216-105-00	METAL CHIP	220K	5%	1/10W
R303	1-216-073-00	METAL CHIP	10K	5%	1/10W
R304	1-216-105-00	METAL CHIP	220K	5%	1/10W
R305	1-216-047-00	METAL CHIP	820	5%	1/10W
R306	1-216-033-00	METAL CHIP	220	5%	1/10W
R307	1-216-049-00	METAL CHIP	1K	5%	1/10W
R308	1-216-049-00	METAL CHIP	1K	5%	1/10W
R309	1-216-047-00	METAL CHIP	820	5%	1/10W
R310	1-216-033-00	METAL CHIP	220	5%	1/10W
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W
R312	1-216-105-00	METAL CHIP	220K	5%	1/10W
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W
R314	1-216-105-00	METAL CHIP	220K	5%	1/10W
R315	1-216-047-00	METAL CHIP	820	5%	1/10W
R316	1-216-033-00	METAL CHIP	220	5%	1/10W
R317	1-216-049-00	METAL CHIP	1K	5%	1/10W
R318	1-216-073-00	METAL CHIP	10K	5%	1/10W
R319	1-216-073-00	METAL CHIP	10K	5%	1/10W

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Ref. No.	Part No.	Description				Remark
R320	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R321	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R322	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R323	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R324	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R325	1-216-033-00	METAL CHIP	220	5%	1/10W	
R326	1-216-295-00	METAL CHIP	0	5%	1/10W	
R327	1-216-296-00	METAL CHIP	0	5%	1/8W	
R328	1-216-296-00	METAL CHIP	0	5%	1/8W	
R329	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R330	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R331	1-216-043-00	METAL CHIP	560	5%	1/10W	
R332	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R333	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R334	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R336	1-216-045-00	METAL CHIP	680	5%	1/10W	
R337	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R338	1-216-043-00	METAL CHIP	560	5%	1/10W	
R339	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R340	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R341	1-216-651-11	METAL CHIP	1K	0.5%	1/10W	
R342	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R343	1-216-045-00	METAL CHIP	680	5%	1/10W	
R344	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R345	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R346	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R355	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R357	1-216-295-00	METAL CHIP	0	5%	1/10W	
R358	1-216-295-00	METAL CHIP	0	5%	1/10W	
R369	1-216-025-00	METAL CHIP	100	5%	1/10W	
R375	1-216-025-00	METAL CHIP	100	5%	1/10W	
R376	1-216-025-00	METAL CHIP	100	5%	1/10W	
R378	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R379	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R380	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R381	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R384	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R385	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R401	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R402	1-216-045-00	METAL CHIP	680	5%	1/10W	
R403	1-216-045-00	METAL CHIP	680	5%	1/10W	
R404	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R406	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R407	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R408	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R409	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R410	1-216-101-00	METAL CHIP	150K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R411	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R412	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R413	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R414	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R415	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R416	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R417	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R418	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R419	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R420	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R421	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R422	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R423	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R424	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R425	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R426	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R427	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R428	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R429	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R430	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R431	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R432	1-216-082-00	METAL GLAZE	24K	5%	1/10W	
R433	1-216-100-00	METAL GLAZE	130K	5%	1/10W	
R434	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R435	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R436	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R437	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R438	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R439	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R440	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R442	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R443	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R444	1-216-033-00	METAL CHIP	220	5%	1/10W	
R445	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R446	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R447	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R448	1-216-092-00	METAL GLAZE	62K	5%	1/10W	
R449	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R450	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R451	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R452	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R453	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R454	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R455	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R456	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R457	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R458	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R459	1-216-049-00	METAL CHIP	1K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R460	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R461	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R462	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R463	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R464	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R465	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R466	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R467	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R468	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R469	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R472	1-216-017-00	METAL CHIP	47	5%	1/10W	
R473	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R474	1-216-003-11	METAL GLAZE	12	5%	1/10W	
R475	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R476	1-249-387-11	CARBON	3.3	5%	1/4W	F
R477	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R478	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R479	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R480	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R481	1-216-369-00	METAL OXIDE	1	5%	2W	F
R482	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R483	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R487	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R488	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R489	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R490	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R491	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R494	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R495	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R496	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R497	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R498	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R499	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R501	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R502	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R503	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R504	1-216-677-11	METAL CHIP	12K	0.5%	1/10W	
R505	1-216-035-00	METAL CHIP	270	5%	1/10W	
R506	1-216-679-11	METAL CHIP	15K	0.5%	1/10W	
R507	1-218-766-11	METAL CHIP	390K	0.50%	1/10W	
R508	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R509	1-216-685-11	METAL CHIP	27K	0.5%	1/10W	
R510	1-218-760-11	METAL CHIP	220K	0.50%	1/10W	
R511	1-216-675-11	METAL CHIP	10K	0.5%	1/10W	
R512	1-216-687-11	METAL CHIP	33K	0.5%	1/10W	
R513	1-216-699-11	METAL CHIP	100K	0.5%	1/10W	
R514	1-216-679-11	METAL CHIP	15K	0.5%	1/10W	
R515	1-216-687-11	METAL CHIP	33K	0.5%	1/10W	
R516	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R517	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R520	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R521	1-216-045-00	METAL CHIP	680	5%	1/10W	
R522	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R523	1-216-033-00	METAL CHIP	220	5%	1/10W	
R524	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R526	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R527	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R528	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R529	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R530	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R531	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R532	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
⚠R533	1-212-950-00	FUSIBLE	4.7	5%	1/2W	F
R534	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R535	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R536	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R537	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R538	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R539	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R540	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R541	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R542	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R543	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R544	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R546	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R547	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R548	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R549	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R550	1-216-035-00	METAL CHIP	270	5%	1/10W	
R551	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R552	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R553	1-216-013-00	METAL CHIP	33	5%	1/10W	
R554	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R555	1-216-035-00	METAL CHIP	270	5%	1/10W	
R556	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R557	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R558	1-216-021-00	METAL CHIP	68	5%	1/10W	
R559	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R560	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R561	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R564	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R566	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R567	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R568	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R569	1-216-049-00	METAL CHIP	1K	5%	1/10W	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MB-702

Ref. No.	Part No.	Description				Remark
R570	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R571	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R572	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R573	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R574	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R576	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R577	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R578	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R579	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R580	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R581	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R582	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R583	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R585	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R586	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R587	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R588	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R589	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R590	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R591	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R592	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R593	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R594	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R595	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R596	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R597	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R598	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R599	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R601	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R603	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R604	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R605	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R606	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R607	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R608	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R609	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R610	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R611	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R612	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R613	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R614	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R615	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R616	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R617	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R618	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R620	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R621	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R622	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R623	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R624	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R625	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R626	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R627	1-216-295-00	METAL CHIP	0	5%	1/10W	
R628	1-216-041-00	METAL CHIP	470	5%	1/10W	
R629	1-216-295-00	METAL CHIP	0	5%	1/10W	
R630	1-216-295-00	METAL CHIP	0	5%	1/10W	
R631	1-216-295-00	METAL CHIP	0	5%	1/10W	
R632	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R633	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R634	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R635	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R636	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R637	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R638	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R639	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R642	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R643	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R644	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R701	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W	
R702	1-216-683-11	METAL CHIP	22K	0.5%	1/10W	
R703	1-216-035-00	METAL CHIP	270	5%	1/10W	
R704	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R705	1-216-043-00	METAL CHIP	560	5%	1/10W	
R706	1-216-043-00	METAL CHIP	560	5%	1/10W	
R707	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R708	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R709	1-216-119-00	METAL CHIP	820K	5%	1/10W	
R710	1-216-043-00	METAL CHIP	560	5%	1/10W	
R711	1-216-699-11	METAL CHIP	100K	0.5%	1/10W	
R712	1-216-683-11	METAL CHIP	22K	0.5%	1/10W	
R713	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W	
R714	1-216-674-11	METAL CHIP	9.1K	0.5%	1/10W	
R715	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R716	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R717	1-216-029-00	METAL CHIP	150	5%	1/10W	
R801	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R802	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R803	1-216-295-00	METAL CHIP	0	5%	1/10W	
R804	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R805	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R806	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R807	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R808	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R809	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R810	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R812	1-216-295-00	METAL CHIP	0	5%	1/10W	
R813	1-216-295-00	METAL CHIP	0	5%	1/10W	

Ref. No.	Part No.	Description	Remark
R814	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< VARIABLE RESISTOR >	
RV001	1-241-081-11	RES, ADJ, CARBON 22K	
RV401	1-241-083-11	RES, ADJ, CARBON 47K	
RV402	1-241-083-11	RES, ADJ, CARBON 47K	
		< SWITCH >	
S201	1-553-725-21	SWITCH, SLIDE (ATTENUATOR)	
		< TRANSFORMER >	
T201	1-406-647-11	COIL	
		< VIBRATOR >	
X001	1-579-617-11	VIBRATOR, CRYSTAL 29.1958MHz	
X201	1-579-618-11	VIBRATOR, CRYSTAL 22.5MHz	
**			
	A-6421-956-A	MD-703 BOARD, COMPLETE ********************** (Ref. No. 2,000 Series)	
	3-953-262-01	HOLDER, LED	
		< CAPACITOR >	
C431	1-126-947-11	ELECT 47uF 20% 35V	
		< CONNECTOR >	
* CN431	1-691-503-11	CONNECTOR, FPC 14P	
CN432	1-506-470-11	PIN, CONNECTOR 5P	
CN433	1-564-014-11	PIN, CONNECTOR 4P	
CN434	1-506-468-11	PIN, CONNECTOR 3P	
		< DIODE >	
D431	8-719-912-39	LED SLR932A	
D432	8-729-020-74	DIODE GP1S24	
D433	8-729-020-74	DIODE GP1S24	
D434	8-729-020-74	DIODE GP1S24	
		< IC >	
IC431	8-759-927-46	IC SN74HC00ANS	
		< JUMPER RESISTOR >	
JR413	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR414	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR431	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR432	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR433	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR435	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR437	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR438	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR439	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR440	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR441	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR442	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR443	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR444	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR445	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR446	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR447	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR448	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR449	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR450	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR451	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR452	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR453	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR454	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR455	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR456	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR457	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR458	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR460	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR461	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< RESISTOR >	
R431	1-216-033-00	METAL CHIP 220 5% 1/10W	
R432	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R433	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R434	1-216-045-00	METAL CHIP 680 5% 1/10W	
R435	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R436	1-216-039-00	METAL CHIP 390 5% 1/10W	
R437	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R438	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R439	1-216-095-00	METAL CHIP 82K 5% 1/10W	
		< SWITCH >	
S431	1-692-440-11	SWITCH, PUSH (TILT)	
**			
*	A-6423-049-A	ME-701 BOARD, COMPLETE ********************** (Ref. No. 1,000 Series)	
		< CAPACITOR >	
C789	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C790	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C791	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C792	1-165-319-11	CERAMIC CHIP 0.1uF 50V	

Ref. No.	Part No.	Description			Remark
C793	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C795	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C796	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description
CN791	1-569-335-11	CONNECTOR, BOARD TO BOARD 9P
CN792	1-764-179-11	CONNECTOR, BOARD TO BOARD 13P
CN793	1-573-538-11	CONNECTOR, BOARD TO BOARD 8P

< FERRITE BEAD >

Ref. No.	Part No.	Description
FB783	1-414-135-11	INDUCTOR CHIP OUH
FB784	1-414-135-11	INDUCTOR CHIP OUH
FB785	1-414-135-11	INDUCTOR CHIP OUH
FB786	1-414-135-11	INDUCTOR CHIP OUH
FB787	1-414-135-11	INDUCTOR CHIP OUH
FB789	1-414-135-11	INDUCTOR CHIP OUH
FB790	1-414-135-11	INDUCTOR CHIP OUH
FB791	1-414-135-11	INDUCTOR CHIP OUH
FB792	1-414-135-11	INDUCTOR CHIP OUH
FB793	1-414-135-11	INDUCTOR CHIP OUH
FB794	1-414-135-11	INDUCTOR CHIP OUH
FB795	1-414-135-11	INDUCTOR CHIP OUH
FB796	1-414-135-11	INDUCTOR CHIP OUH
FB797	1-414-135-11	INDUCTOR CHIP OUH
FB798	1-414-135-11	INDUCTOR CHIP OUH
FB799	1-414-135-11	INDUCTOR CHIP OUH

< FILTER >

Ref. No.	Part No.	Description
FL791	1-236-071-11	ENCAPSULATED COMPONENT
FL792	1-236-071-11	ENCAPSULATED COMPONENT
FL793	1-236-071-11	ENCAPSULATED COMPONENT

< IC >

Ref. No.	Part No.	Description	
IC791	8-759-081-65	IC	MSM7H007-023GS-VK
IC792	8-759-172-96	IC	MSM518221-30JS

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R776	1-216-295-00	METAL CHIP	0	5%	1/10W
R777	1-216-049-00	METAL CHIP	1K	5%	1/10W
R779	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R782	1-216-113-00	METAL CHIP	470K	5%	1/10W
R783	1-216-113-00	METAL CHIP	470K	5%	1/10W
R784	1-216-049-00	METAL CHIP	1K	5%	1/10W
R785	1-216-049-00	METAL CHIP	1K	5%	1/10W
R786	1-216-049-00	METAL CHIP	1K	5%	1/10W
R787	1-216-049-00	METAL CHIP	1K	5%	1/10W
R788	1-216-049-00	METAL CHIP	1K	5%	1/10W
R789	1-216-049-00	METAL CHIP	1K	5%	1/10W
R790	1-216-049-00	METAL CHIP	1K	5%	1/10W
R791	1-216-049-00	METAL CHIP	1K	5%	1/10W
R792	1-216-049-00	METAL CHIP	1K	5%	1/10W
R793	1-216-049-00	METAL CHIP	1K	5%	1/10W
R794	1-216-049-00	METAL CHIP	1K	5%	1/10W
R795	1-216-049-00	METAL CHIP	1K	5%	1/10W
R796	1-216-049-00	METAL CHIP	1K	5%	1/10W
R797	1-216-049-00	METAL CHIP	1K	5%	1/10W
R798	1-216-049-00	METAL CHIP	1K	5%	1/10W
R799	1-216-049-00	METAL CHIP	1K	5%	1/10W

****

* A-6423-043-A MI-703 BOARD, COMPLETE
****
(Ref. No. 4,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C501	1-126-160-11	ELECT	1uF	20%	50V
C502	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-126-160-11	ELECT	1uF	20%	50V
C504	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C505	1-126-163-11	ELECT	4.7uF	20%	50V
C506	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C507	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C508	1-126-163-11	ELECT	4.7uF	20%	50V
C509	1-124-584-00	ELECT	100uF	20%	10V
C510	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C511	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C512	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C513	1-162-638-11	CERAMIC CHIP	1uF		16V
C514	1-124-584-00	ELECT	100uF	20%	10V
C515	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C516	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C517	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C518	1-162-638-11	CERAMIC CHIP	1uF		16V
C519	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C520	1-124-589-11	ELECT	47uF	20%	16V
C521	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C522	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C523	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C524	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C525	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C526	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C527	1-162-638-11	CERAMIC CHIP	1uF		16V
C528	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C529	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C530	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C531	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description	Remark
C532	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C533	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
C534	1-163-239-11	CERAMIC CHIP 33PF 5%	50V
C535	1-124-589-11	ELECT 47uF 20%	16V
C536	1-124-589-11	ELECT 47uF 20%	16V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN501	1-506-470-11	PIN, CONNECTOR 5P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D501	8-719-800-76	DIODE 1SS226	

< FERRITE BEAD >

Ref. No.	Part No.	Description	Remark
FB501	1-410-991-11	INDUCTOR CHIP 0.68UH	
FB503	1-410-377-31	INDUCTOR CHIP 4.7uH	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL501	1-236-728-11	ENCAPSULATED COMPONENT	
FL502	1-236-728-11	ENCAPSULATED COMPONENT	

< IC >

Ref. No.	Part No.	Description	Remark
IC501	8-759-053-14	IC M65831FP-600C	
IC502	8-759-636-55	IC M5218AFP	
IC503	8-759-924-46	IC BA4560F	
⚠IC504	8-759-630-34	IC M5278L05M	

< JACK >

Ref. No.	Part No.	Description	Remark
J501	1-569-112-31	JACK, LARGE TYPE (MIC)	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR502	1-216-295-00	METAL CHIP 0 5%	1/10W (A7)

< COIL >

Ref. No.	Part No.	Description	Remark
L501	1-414-189-31	INDUCTOR 100uH	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R501	1-216-025-00	METAL CHIP 100 5%	1/10W
R502	1-216-097-00	METAL CHIP 100K 5%	1/10W
R503	1-216-073-00	METAL CHIP 10K 5%	1/10W
R504	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R505	1-216-077-00	METAL CHIP 15K 5%	1/10W
R506	1-216-073-00	METAL CHIP 10K 5%	1/10W
R507	1-216-067-00	METAL CHIP 5.6K 5%	1/10W
R508	1-216-073-00	METAL CHIP 10K 5%	1/10W
R509	1-216-073-00	METAL CHIP 10K 5%	1/10W
R510	1-216-073-00	METAL CHIP 10K 5%	1/10W
R511	1-216-121-00	METAL CHIP 1M 5%	1/10W
R512	1-216-081-00	METAL CHIP 22K 5%	1/10W
R513	1-216-077-00	METAL CHIP 15K 5%	1/10W
R514	1-216-073-00	METAL CHIP 10K 5%	1/10W
R515	1-216-077-00	METAL CHIP 15K 5%	1/10W
R516	1-216-077-00	METAL CHIP 15K 5%	1/10W
R517	1-216-073-00	METAL CHIP 10K 5%	1/10W
R518	1-216-077-00	METAL CHIP 15K 5%	1/10W
R519	1-216-081-00	METAL CHIP 22K 5%	1/10W
R520	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R521	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R522	1-216-049-00	METAL CHIP 1K 5%	1/10W
R523	1-216-097-00	METAL CHIP 100K 5%	1/10W
R524	1-216-009-00	METAL CHIP 22 5%	1/10W
R525	1-216-009-00	METAL CHIP 22 5%	1/10W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV501	1-223-190-11	RES, VAR, CARBON 10K/10K (MIC ECHO)	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X501	1-577-260-21	VIBRATOR, CERAMIC	

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* A-6421-953-A MT-702 BOARD, COMPLETE

****

(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C471	1-161-063-00	CERAMIC 0.1uF 10%	50V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN471	1-695-105-11	PIN, CONNECTOR (PC BOARD) 3P	

< MOTOR >

Ref. No.	Part No.	Description	Remark
M471	X-3942-963-1	MOTOR ASSY (LOADING)	

****

* A-6421-955-A MT-703 BOARD, COMPLETE

****

(Ref. No. 2,000 Series)

< MOTOR >

Ref. No.	Part No.	Description	Remark
M903	X-3942-968-1	TILT MOTOR ASSY	

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The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PS-713

Ref. No.	Part No.	Description	Remark
*	A-6423-039-A	PS-713 BOARD, COMPLETE (800) **************************** (Ref. No. 6, 000 Series)	
*	A-6423-045-A	PS-713 BOARD, COMPLETE (A7) *************************** (Ref. No. 6, 000 Series)	
⚠	1-533-189-11	HOLDER, FUSE	

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C031	1-126-948-11	ELECT	100uF	20%	35V	
C032	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C033	1-126-948-11	ELECT	100uF	20%	35V	
C034	1-164-222-11	CERAMIC CHIP	0.22uF		25V	
C035	1-126-941-11	ELECT	470uF	20%	25V	
C036	1-126-944-11	ELECT	3300uF	20%	25V	
C037	1-126-946-11	ELECT	6800uF	20%	25V	
C038	1-126-944-11	ELECT	3300uF	20%	25V	
C039	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C040	1-126-103-11	ELECT	470uF	20%	16V	
C041	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C042	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C043	1-126-103-11	ELECT	470uF	20%	16V	
C044	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C045	1-124-563-11	ELECT	2200uF	20%	25V	
C047	1-124-557-11	ELECT	1000uF	20%	25V	
C051	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C052	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	
C054	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C055	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
C056	1-163-007-11	CERAMIC CHIP	680PF	10%	50V	
C058	1-163-035-00	CERAMIC CHIP	0.047uF		50V	
C059	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
C060	1-163-007-11	CERAMIC CHIP	680PF	10%	50V	
C061	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
C062	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C063	1-124-122-11	ELECT	100uF	20%	50V	
C064	1-163-035-00	CERAMIC CHIP	0.047uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN030	1-564-029-00	PIN, CONNECTOR 4P	
CN031	1-506-483-21	PIN, CONNECTOR 4P	
CN051	1-506-490-21	PIN, CONNECTOR 11P	
CN052	1-564-506-11	PLUG, CONNECTOR 3P	
CN053	1-506-483-21	PIN, CONNECTOR 4P	

< DIODE >

Ref. No.	Part No.	Description		Remark
⚠D031	8-719-200-82	DIODE	11ES2	
⚠D032	8-719-200-82	DIODE	11ES2	
D033	8-719-911-19	DIODE	1SS119	
⚠D034	8-719-025-17	DIODE	D3SBA10-4100	
⚠D035	8-719-200-82	DIODE	11ES2	
⚠D036	8-719-980-78	DIODE	ERA81-006	
⚠D037	8-719-980-78	DIODE	ERA81-006	
⚠D038	8-719-980-78	DIODE	ERA81-006	
⚠D039	8-719-980-78	DIODE	ERA81-006	
D051	8-719-980-78	DIODE	ERA81-006	
D052	8-719-980-78	DIODE	ERA81-006	
D053	8-719-200-82	DIODE	11ES2	
D054	8-719-200-82	DIODE	11ES2	
D055	8-719-911-19	DIODE	1SS119	
D056	8-719-911-19	DIODE	1SS119	
D057	8-719-911-19	DIODE	1SS119	
D058	8-719-109-85	DIODE	RD5.1ES-B2	
D059	8-719-109-75	DIODE	RD4.3ES-B2	
D060	8-719-911-19	DIODE	1SS119	
⚠D061	8-719-503-40	DIODE	S3V40	

< FUSE >

Ref. No.	Part No.	Description	Remark
⚠F031	1-532-299-00	FUSE, TIME-LAG 5A 250V (A7)	
⚠F031	1-532-747-11	FUSE, GLASS TUBE 5A 125V (800)	
⚠F032	1-532-299-00	FUSE, TIME-LAG 5A 250V (A7)	
⚠F032	1-532-747-11	FUSE, GLASS TUBE 5A 125V (800)	
F053	1-532-780-21	FUSE, MICRO 2.5A 125V (800)	
F054	1-532-780-21	FUSE, MICRO 2.5A 125V (800)	

< IC >

Ref. No.	Part No.	Description		Remark
⚠IC031	8-759-231-53	IC	TA7805S	
⚠IC032	8-759-701-58	IC	NJM78M08FA	
⚠IC033	8-759-701-67	IC	NJM79M08FA	
IC051	8-759-100-93	IC	uPC393G2	
IC052	8-759-996-43	IC	RC4558PS	

< COIL >

Ref. No.	Part No.	Description	Remark
⚠L031	1-410-521-11	INDUCTOR 100uH	
L051	1-424-219-11	COIL, CHOKE 300uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS051	1-532-675-00	LINK, IC 1.5A	
⚠PS052	1-532-675-00	LINK, IC 1.5A	
⚠PS053	1-532-843-21	LINK, IC (A7)	
⚠PS054	1-532-843-21	LINK, IC (A7)	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
⚠Q031	8-729-141-75	TRANSISTOR	2SD596DV345	
⚠Q051	8-729-117-11	TRANSISTOR	2SB1151-L	
⚠Q052	8-729-019-31	TRANSISTOR	2SC4596E	
⚠Q053	8-729-117-11	TRANSISTOR	2SB1151-L	

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Ref. No.	Part No.	Description	Remark
⚠Q054	8-729-019-31	TRANSISTOR 2SC4596E	
Q055	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q056	8-729-216-22	TRANSISTOR 2SA1162-G	
Q058	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q059	8-729-216-22	TRANSISTOR 2SA1162-G	
Q060	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q061	8-729-119-76	TRANSISTOR 2SA1175-HFE	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
⚠R031	1-212-867-00	FUSIBLE 27 5% 1/4W	F
R032	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
⚠R033	1-216-426-11	METAL OXIDE 82 5% 1W	F
R034	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R035	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R051	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R052	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R053	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R054	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R055	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R056	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R057	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R061	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R062	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R063	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R064	1-247-750-11	CARBON 680 5% 1/2W	
R065	1-247-750-11	CARBON 680 5% 1/2W	
R066	1-216-049-00	METAL CHIP 1K 5% 1/10W	
⚠R067	1-216-369-00	METAL OXIDE 1 5% 2W	F
R068	1-216-690-11	METAL CHIP 43K 0.5% 1/10W	
R069	1-216-675-11	METAL CHIP 10K 0.5% 1/10W	
R070	1-216-690-11	METAL CHIP 43K 0.5% 1/10W	
R071	1-216-675-11	METAL CHIP 10K 0.5% 1/10W	
R072	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R073	1-216-073-00	METAL CHIP 10K 5% 1/10W	
⚠R074	1-215-866-11	METAL OXIDE 330 5% 1W	F
R075	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R076	1-247-750-11	CARBON 680 5% 1/2W	
R077	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R078	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R079	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R080	1-216-097-00	METAL CHIP 100K 5% 1/10W	

< RELAY >

Ref. No.	Part No.	Description	Remark
⚠RY031	1-515-833-11	RELAY	

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Ref. No.	Part No.	Description	Remark
*	A-6423-044-A	PW-706 BOARD, COMPLETE (800)	

****

(Ref. No. 7,000 Series)

Ref. No.	Part No.	Description	Remark
*	A-6423-046-A	PW-706 BOARD, COMPLETE (A7)	

****

(Ref. No. 7,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C291	1-124-589-11	ELECT 47uF 20% 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN291	1-506-487-11	PIN, CONNECTOR 8P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D291	8-719-400-18	DIODE MA152WK	
D292	8-719-028-30	DIODE SPR-39MVWF (A7)	
D292	8-719-992-30	LED SLR305MC3F (800)	
D293	8-719-028-30	DIODE SPR-39MVWF (A7)	
D293	8-719-992-30	LED SLR305MC3F (800)	
D294	8-719-992-26	DIODE SLR-305D3F	
D295	8-719-992-30	LED SLR305MC3F	
D296	8-719-992-30	LED SLR305MC3F	

< IC >

Ref. No.	Part No.	Description	Remark
IC291	8-741-100-48	IC SBX1610-59	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q292	8-729-207-69	TRANSISTOR RN2403 (A7)	
Q293	8-729-207-69	TRANSISTOR RN2403	
Q294	8-729-207-69	TRANSISTOR RN2403	
Q295	8-729-207-69	TRANSISTOR RN2403	
Q296	8-729-207-69	TRANSISTOR RN2403	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R277	1-216-037-00	METAL CHIP 330 5% 1/10W	
R278	1-216-037-00	METAL CHIP 330 5% 1/10W	
R279	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R280	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R291	1-216-037-00	METAL CHIP 330 5% 1/10W	(A7)
R292	1-216-037-00	METAL CHIP 330 5% 1/10W	
R293	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R294	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R295	1-216-025-00	METAL CHIP 100 5% 1/10W	
R296	1-216-033-00	METAL CHIP 220 5% 1/10W	
R297	1-216-037-00	METAL CHIP 330 5% 1/10W	(A7)
R298	1-216-033-00	METAL CHIP 220 5% 1/10W	
R299	1-216-049-00	METAL CHIP 1K 5% 1/10W	

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PW-706 **SW-719** **SW-725** **TR-717** **VS-706**

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S292	1-571-977-11	SWITCH, TACTIL (LD QUICK START)	
S293	1-571-977-11	SWITCH, TACTIL (FL DISPLAY)	
S294	1-571-977-11	SWITCH, TACTIL (CAV STILL MODE)	
S295	1-571-977-11	SWITCH, TACTIL (PICTURE CALL)	
S296	1-571-977-11	SWITCH, TACTIL (STANDBY/POWER)	
		**	
*	A-6421-954-A	SW-719 BOARD, COMPLETE *********************** (Ref. No. 3,000 Series)	
		< CONNECTOR >	
* CN481	1-566-779-11	PIN, CONNECTOR (PC BOARD) 4P	
		< SWITCH >	
S481	1-692-439-11	SWITCH, PUSH (LOAD/CHUCK)	
		**	
*	A-6423-042-A	SW-725 BOARD, COMPLETE ********************** (Ref. No. 7,000 Series)	
		< CONNECTOR >	
CN281	1-506-484-11	PIN, CONNECTOR 5P	
		< DIODE >	
D281	8-719-992-30	LED SLR305MC3F	
D282	8-719-992-30	LED SLR305MC3F	
		< RESISTOR >	
R281	1-249-433-11	CARBON 22K 5% 1/4W	
R282	1-249-428-11	CARBON 8.2K 5% 1/4W	F
R283	1-249-424-11	CARBON 3.9K 5% 1/4W	F
R284	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R285	1-249-433-11	CARBON 22K 5% 1/4W	
R286	1-249-428-11	CARBON 8.2K 5% 1/4W	F
R287	1-249-424-11	CARBON 3.9K 5% 1/4W	F
R288	1-249-422-11	CARBON 2.7K 5% 1/4W	F
		< SWITCH >	
S281	1-571-977-11	SWITCH, TACTIL (SIDE B)	
S282	1-571-977-11	SWITCH, TACTIL (ACS/AMS ▶▶|)	
S283	1-571-977-11	SWITCH, TACTIL (ACS/AMS |◀◀)	
S284	1-571-977-11	SWITCH, TACTIL (SCAN ▶▶)	
S285	1-571-977-11	SWITCH, TACTIL (SCAN ◀◀)	
S286	1-571-977-11	SWITCH, TACTIL (SIDE A)	
S287	1-571-977-11	SWITCH, TACTIL (❙❙)	

Ref. No.	Part No.	Description	Remark
S288	1-571-977-11	SWITCH, TACTIL (▷)	
S289	1-571-977-11	SWITCH, TACTIL (■)	
S290	1-571-977-11	SWITCH, TACTIL (OPEN/CLOSE ⏏)	
		**	
*	A-6423-010-A	TR-717 BOARD, COMPLETE (A7) ************************** (Ref. No. 6,000 Series)	
*	A-6423-048-A	TR-717 BOARD, COMPLETE (800) *************************** (Ref. No. 6,000 Series)	
⚠	1-533-189-11	HOLDER, FUSE	
		< CAPACITOR >	
⚠C001	1-104-705-11	FILM 0.1uF 20% 250V	
		< CONNECTOR >	
⚠CN001	1-564-419-11	HEADER, SPRING (POWER) 2P	
		< FUSE >	
⚠F001	1-532-215-00	FUSE, TIME-LAG 0.8A 250V (A7)	
⚠F001	1-532-742-11	FUSE, GLASS TUBE 1.6A 125V (800)	
		< TRANSFORMER >	
⚠T001	1-423-522-11	TRANSFORMER, POWER (800)	
⚠T001	1-423-556-11	TRANSFORMER, POWER (A7)	
⚠T002	1-406-884-11	FILTER, LINE	
		**	
*	A-6423-011-A	VS-706 BOARD, COMPLETE (A7) ************************** (Ref. No. 6,000 Series)	
⚠	1-533-189-11	HOLDER, FUSE	
		< FUSE >	
⚠F021	1-532-066-00	FUSE, TIME-LAG 0.4A 250V (A7)	
		< SWITCH >	
⚠S021	1-570-615-11	SELECTOR, POWER VOLTAGE (VOLTAGE SELECTOR)	
		**	
		MISCELLANEOUS *************	
⚠157	1-951-569-11	HARNESS (AC-1) (800)	
208	8-848-286-01	DEVICE, OPTICAL KHS-150A	
211	1-751-083-11	CABLE, FLEXIBLE FLAT (18 CORE)	
221	1-751-084-11	CABLE, FLEXIBLE FLAT (14 CORE)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
M901	1-698-109-11	MOTOR, DD (SPINDLE)	

****

ACCESSORIES & PACKING MATERIALS

****

⚠	1-569-008-11	ADAPTER, CONVERSION 2P (A7)	
⚠	1-574-085-11	CORD, POWER (800)	
	1-575-334-11	CORD, CONNECTION (VIDEO/AUDIO CONNECTING CABLE 1.5m)	
	3-757-487-21	MANUAL, INSTRUCTION (ENGLISH, CHINESE)	
	3-757-487-31	MANUAL, INSTRUCTION (FRENCH) (800:Canadian)	
*	3-795-581-21	SAFEGUARD (SONY), IMPORTANT	(800:US)
*	3-953-404-01	CUSHION (UPPER)	
*	3-953-405-01	CUSHION (LOWER)	
*	3-953-410-21	INDIVIDUAL CARTON	(800)
*	3-953-410-31	INDIVIDUAL CARTON	(A7)

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****

HARDWARE LIST

****

#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#2	7-671-155-01	STEEL BALL 3.0
#3	7-624-105-04	STOP RING 2.3, TYPE -E
#4	7-685-144-11	SCREW +P 3X5 TYPE2 NON-SLIT
#5	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S
#6	7-682-645-01	SCREW +PS 3X4
#7	7-685-647-79	SCREW +BVTP 3X10 TYPE2
#8	7-627-553-48	SCREW, PRECISION +P 2X4
#9	7-628-253-05	SCREW +PS 2X4
#10	7-621-759-35	+PSW, 2.6X5
#11	7-684-220-02	NUT 3, HEXAGON CAP
#12	7-624-190-81	STOP RING 2, TYPE-CS
#13	7-682-947-01	SCREW +PSW 3X6
#14	7-621-759-65	+PSW, 2.6X8
#15	7-685-661-14	SCREW +BVTP 4X12 TYPE2 IT-3
#16	7-624-102-04	STOP RING 1.5, TYPE -E
#17	7-685-131-19	SCREW +P 2.6X4 TYPE2 NON-SLIT
#18	7-685-646-81	SCREW +BVTP 3X8 TYPE2
#19	7-685-158-19	SCREW +P 4X6 TYPE2 NON-SLIT
#20	7-685-103-19	SCREW +P 2X5 TYPE2 SLIT
#21	7-685-648-79	SCREW +BVTP 3X12 TYPE2
#22	7-621-775-20	SCREW +B 2.6X5 (A7)
#23	7-623-210-22	SW 4, TYPE 2
#24	7-688-003-11	W 3, MIDDLE

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 7
IC PIN DESCRIPTION

7-1. MB-702 BOARD IC501 MB89094 PIN FUNCTION

Pin No.	Pin Name	I/O	Description
1	N.C		
2	CLK32	I	CRYSTAL OSCILLATOR (32 kHz) input
3	GND	I	
4	GND	I	
5	2FSC	I	CRYSTAL OSCILLATOR (2 Esc) input
6	N.C		
7	Vss	I	GND
8	XRST	I	RESET TERMINAL (L : RESET)
9	XFREQ	I	PHIL CODE READ OUT ENABLE
10	FQACK	O	DISC DATA READ IN
11	FQSEL	O	PHILLIPS CODE / SUBQ DATA SELECT (L : SUBQ)
12	JPCTRL	O	ITJ / MTJ SELECT SIGNAL (H : ITJ)
13	SPLOCK	I	SPINDLE LOCK SIGNAL (H : DURING SPINDLE LOCKING)
14	TBCHOLDIN	O	CHROMA TBC CONTROL
15	SCOR	I	H WHEN SUB CODE SYNC IS DETECTED
16	XPBV	I	V SYNC SIGNAL
17	XREFV	I	REFERENCE V SYNC SIGNAL
18	ALT	O	A REGISTER LATCH
19	BLT	O	B REGISTER LATCH
20	XBUSY	I	COMMUNICATION ENEBLE SIGNAL FROM MMI (H : COMMUNICATION ENABLE)
21 ~ 24	N.C		
25	CLSCS	O	CHIP SELECT FOR READING PHASE DIFFERENCE DATA
26	SPDLPLS	O	SPINDLE PULSE DRIVE SIGNAL (H : spdl free run)
27	TBRKMON	O	SERVO IC BRAKE MONITOR (H : BRAKE ON)
28	+5V	I	
29	CLSDT	I	SERIAL INPUT DATA
30	SETDT	O	SERIAL OUTPUT DATA
31	SETCK	O	SERIAL TRANSFERRING CLOCK
32	SPDLFG1	I	SPINDLE FG INPUT 1 (1 ROTATION : 12WAVES)
33	CGV_MUTE	I	CGV MUTE SIGNAL (H, L OUTPUT) NORMALLY HiIMP
34	LD SEARCH	O	FOR SPDL ER AMP C SHORT (H : DURING SEARCHING)
35	SPDL F/R	O	SPINDLE ROTATING DIRECTION SIGNAL (H : FWD)
36	N.C		
37	JMP TRIG	O	TRACK JUMP TRIGGER PULSE OUTPUT
38	MWE	O	NOT USED
39	MEM/THR	O	NOT USED
40	MSTAT	O	NOT USED
41	MTJ	I	TRACKING PULSE GENERATOR FOR MTJ NORMALLY INPUT, OUTPUT DURING ACTIVATE (L : FWD)
42	MTF ON/OFF	O	MTF CORRECTION ON / OFF SIGNAL (H : MTF ON)
43	TRK OFF	O	PUT OFF SERVO IC TRACKING CONTROL (L : TRACKING OFF)
44	SHARP	O	PICTURE ENHANCE SHARP
45	GMUTE	O	GRAY SCREEN ON / OFF SIGNAL ON CLS (ON : H)
46	N.C		
47	XSOFT	O	PICTURE ENHANCE SOFT
48	FOK	I	FOCUS LOCK SIGNAL (H : FOCUS LOCK)
49	Vcc	I	+5V POWER SUPPLY
50	XBUSY	I	COMMUNICATION ENABLE SIGNAL FROM MMI (H : COMMUNICATION ENABLE)
51	TV/DISC	O	ANTNNA TV / DISC SELECT
52	SLED FWD	O	SLED FWD FORCE MOVE FROM PORT
53	SLED REV	O	SLED REV FORCE MOVE FROM PORT
54	XMMICS	O	COMMUNICATION CHIP SELECT TO MMI
55	LOADING	O	TRAY LOADING DRIVE
56	UN LOADING	O	TRAY EJECT DRIVE
57	X DSW LD	O	YSD221 CHIP SELECT (L : COMMUNICATING)
58	Vss	I	GND
59	LINE MUTE	O	AUDIO OUTPUT MUTE SIGNAL (H : MUTE)
60	SLED SPEED	O	SLED DRIVE SPEED CHANGE (L : SLOW)
61	XSV DSP RST	O	SERVO DSP DF RESET (L : RESET)
62	LD ON	O	OPT LIGHT EMITTING • TILT ON (H : EMITTING)
63	XCD/LD CDV	O	CD / VDV : L DURING APART, OTHERS H
64	SLED MODE	O	1 : SLED IS IN PLAY MODE
65	SIDE A/B	O	TILT SERVO SIDE SELECT (A : H, B : L)
66	XT/H SV	O	TILT / HIGHT SELECT (L : TILT)
67	LCSW1	I	LOADING / CHUCKING POSITION SENSOR INPUT 1
68	XLD LED	O	LED EMITTING SIGNAL FOR DISC DISCRIMINATION
69	LCSW3	I	LOADING / CHUCKING POSITION SENSOR INPUT 2
70	LCSW2	I	LOADING / CHUCKING POSITION SENSOR INPUT 3
71	SPDL FG2	I	SPINDLE FG INPUT 2
72	TILT LIMIT	I	TILT UP / DOWN LIMIT SW INPUT
73	TILT CTR	I	TILT CENTOR POSITION SW INPUT
74	MECH SI	I	32 BYTE SERIAL TRANFERRING DATA INPUT
75	N.C		
76	N.C		
77	MECH SO	I	32 BYTE SERIAL TRANFERRING DATA OUTPUT
78	MECH SI	O	32 BYTE SERIAL TRANFERRING DATA INPUT
79	MECH CLK	O	32 BYTE SERIAL TRANFERRING CLOCK
80	T CNT	I	NOT USED
81	N.C		
82	N.C		
83	AVss	I	GND
84	LDDET	I	A / D INPUT THERE IS DISC OR NOT, 8 /12 INCH DETECTION
85	CDV/FRLMT	I	A / DINPUT SLED POSITION INFORMATION (CDV)
86	CD ABLD	I	A / DINPUT SLED POSITION INFORMATION (CD, ALD, BLD)
87	INLIMIT	I	A / DINPUT SLED POSITION INFORMATION (INLIMIT)
88	XDSPLT	O	DSP LATCH SIGNAL
89	MUTG	O	DSP MUTE SIGNAL (H : MUTE)
90	LOCK	I	FRME SYNC (EFM) LOCK SIGNAL (Hi LOCK)
91	SENSE	I	VARIOUS SENSE INPUT SIGNAL FROM DSP
92	AVcc	I	+5V POWER SUPPLY
93	MIC IN	I	NOT USED
94	XDFLT	O	DIGITAL FILTER LATCH SIGNAL
95	ASSIST	O	NOT USED
96	KCS	O	NOT USED
97	CX	O	CX ON / OFF (H : ON)
98	N.C		
99	XDSPSEL	O	SELECTS COMMUNICATION WITH DSP (L : CONNECT, H : SEPARATE)
100	Vcc	I	POWER SUPPLY TERMINAL (+5V)

7-2. FP-722 BOARD IC201 MB89095 PIN FUNCTION

Pin No.	Pin Name	I/O	Description
1	CLK32KHZ	O	FOR CRYSTAL OSCILLATOR (32 kHz)
2	CLK32KHZ	I	FOR CRYSTAL OSCILLATOR (32 kHz)
3	GND	I	
4	GND	I	
5	CLK8MHZ	I	FOR CRYSTAL OSCILLATOR (8 MHz)
6	CLK8MHZ	O	FOR CRYSTAL OSCILLATOR (8 MHz)
7	Vss	I	GND
8	X RST	I	RESET IN (L : RESET)
9	X MRST	I	SLC RESET IN (L : RESET)
10	X BUSY	O	L WHEN COMMUNICATING WITH SLC
11	AUMUTE	O	H WHEN AUDIO MUTING
12 ~ 16	N.C		
17	X REFV	I	REFERENCE V SYNC. SIGNAL
18	X MMI CS	I	CHIP SELECT FOR COMMUNICATION WITH SLC (L : COMMUNICATING)
19 ~ 24	N.C		
25	POW CTR	O	POWER ON / OFF CONTROL OF THE SET (H : POWER ON)
26	N.C		
27	N.C		
28	+5V PULLUP	I	START MODE SELECTIONS INPUT AFTER IS RELEASED
29	N.C		
30	CG SI	O	CHARACTER GENERATOR SERIAL TRANSFERRING DATA OUT
31	CG CLK	O	CHARACTER GENERATOR SERIAL TRANSFERRING DATA CLOCK OUT
32	SIRCS IN	I	SIRCS DATA IN
33	X CG CS	O	CHARACTER GENERATOR SERIAL TRANSFERRING CHIP SELECT (L : COMMUNICATING)
34 ~ 38	N.C		
39	FL P1	O	FL TUBE SEGMENT OUT
40	P2	O	FL TUBE SEGMENT OUT
41	P3	O	FL TUBE SEGMENT OUT
42	P4	O	FL TUBE SEGMENT OUT
43	P5	O	FL TUBE SEGMENT OUT
44	P6	O	FL TUBE SEGMENT OUT
45	P7	O	FL TUBE SEGMENT OUT
46	P8	O	FL TUBE SEGMENT OUT
47	P9	O	FL TUBE SEGMENT OUT
48	P10	O	FL TUBE SEGMENT OUT
49	Vcc	I	EVER +5V POWER SUPPLY
50	FL P11	O	FL TUBE SEGMENT OUT
51	P12	O	FL TUBE SEGMENT OUT
52	P13	O	FL TUBE SEGMENT OUT
53	VRDP	I	− 30V HIGH WITH SAND VOLT PGE PULL DOWN POWER SUPPLY
54	FL P14	O	FL TUBE SEGMENT OUT
55	P15	O	FL TUBE SEGMENT OUT
56	P16	O	FL TUBE SEGMENT OUT
57	FL P17	O	FL TUBE SEGMENT OUT
58	Vss	I	GND
59	FL P18	O	FL TUBE SEGMENT OUT
60	P19	O	FL TUBE SEGMENT OUT
61	P20	O	FL TUBE SEGMENT OUT
62	P21	O	FL TUBE SEGMENT OUT
63	P22	O	FL TUBE SEGMENT OUT
64	P23	O	FL TUBE SEGMENT OUT
65	N.C	O	
66	N.C	O	
67	Vcc	I	EVER +5 V POWER SUPPLY
68	FL 7G	O	FL TUBE GRID OUT
69	6G	O	FL TUBE GRID OUT
70	5G	O	FL TUBE GRID OUT
71	4G	O	FL TUBE GRID OUT
72	3G	O	FL TUBE GRID OUT
73	2G	O	FL TUBE GRID OUT
74	1G	O	FL TUBE GRID OUT
75	N.C		
76	X MMI CS	I	32 BYTE SERIAL TRANSFERRING CHIP SELECT (L : COMMUNICATING)
77	MECH SO	I	32 BYTE SERIAL TRANSFERRING DATA INPUT
78	MECH SI	O	32 BYTE SERIAL TRANSFERRING DATA OUTPUT
79	MECH CLK	O	32 BYTE SERIAL TRANSFERRING CLOCK
80	N.C		
81	X SA LED	O	SIDE A LED OUT (L : LIGHTING UP)
82	X SB LED	O	SIDE B LED OUT (L : LIGHTING UP)
83	AVss	I	GND
84	AD0	I	KEY INPUT
85	AD1	I	KEY INPUT
86	AD2	I	KEY INPUT
87 ~ 91	N.C		
92	AVcc	I	EVER +5 V POWER SUPPLY
93	N.C		
94	− 16V. MONITOR	I	− 16V MONITOR
95	AD3	I	DOOR SWITCH INPUT
96	REG. MONITOR	I	REG +5 V MONITOR
97	N.C		
98	X QUICK LED	I	DIRECT A CCESS LED OUTPUT (L : LIGHTING UP)
99	N.C		
100	Vcc	I	EVER +5 V POWER SUPPLY

SECTION 8
ELECTRICAL ADJUSTMENTS

During the adjustment, see the parts arrangement diagram for adjustments on page from 152.

8-1. LIST OF SERVICING JIGS

- Oscilloscope
- Color monitor TV
- Digital voltmeter
- Frequency counter
- Remote commander (RMT-M20A)
- LD alignment disc HVL-8 (8-797-008-00) NTSC Ref. Disc 8

8-2. CAUTIONS ON ADJUSTMENT

- Disc load/unload operation must not be performed when servicing with the unit laying down sideways. (Never press the OPEN and CLOSE buttons.)
- When laying the unit down sideways, perform adjustment with the left side down and turn the power on.
- When adjusting the servo system, be sure to set up the unit horizontally.

8-3. OPERATION OF THE MDP-A7/800 WITH HIDDEN KEY FUNCTIONS

1. Explanation of the hidden key functions

Special control functions to be used for the test or some other purposes of the MDP-A7/800 are available by pressing at the same time and in specific order the multiple function keys on the main unit and/or on the remote control unit. The control functions available in this way are called "special key functions".
The special key functions can be used in either of the following modes.

- the service mode,
- the debugging mode, or
- the normal operation mode.

The special key functions can be divided into two groups according to the key control operations as follows:

- Simultaneous main-unit-key-press functions
  Some control functions can be used by pressing simultaneously multiple specific keys on the main unit.
- Simultaneous main-and-remote-control-units-key-press functions
  Some other control functions can be used by pressing simultaneously two specific keys on the remote control unit while holding down a specific key on the main unit.

2. How to use "simultaneous main-unit-key-press functions"

The functions available by pressing simultaneously the multiple specific keys only on the main unit are called "simultaneous main-unit-key-press functions". These functions are to be used when a quick operation such as "forced power off" is required.
The following table lists the currently available simultaneous main-unit-key-press functions.

Table 8-1. List of simultaneous main-unit-key-press functions

Keys to be pressed on the main unit	Functions
Reverse direction scanning key and power key	(1) Forced power off This function turns off power forcibly. It is to be used if you want to turn off the power in the following cases. • Operation of the mechanisms is out of control. • Power cannot be turned off by pressing the power key. Note that this function should be used with care because it may turn off the power in a half way of the operation of the mechanisms.
STOP key and power key	(2) Forced reset This function carries out initialization of the mode controller in addition to the forced power off function. It is to be used if you want to reset the mode controller in the following case. Something is wrong with the mode controller such that it operates with incorrect display. Note that once this function has been carried out, all information, including the history of emergency case, other than the trap-flag information in the debugging mode, will be deleted.
B side key and door open/close key and power key (With power off only)	(3) Lighting up all the FL display (all the segments of the FL tube) and LEDs on the main unit This function turns on all the FL tube segments and LEDs after turning on the power automatically. Until you switched off the power, normal operation is possible while all the FL tube segments and LEDs are lit.

3. How to use "simultaneous main-and-remote-control-units-key-press functions"

The functions available by pressing the two specific keys on the remote control unit while holding down the specific key on the main unit are called "simultaneous main-and-remote-control-units-key-press functions". It is necessary to press two keys on the remote control unit within about one second. This prevents an accidental use of these functions by the user.

These functions are to be carried out by using the FL display key, so that the operation of the mechanisms is not affected.

The following table lists the currently available simultaneous main-and-remote-control-units-key-press functions.

Table 8-2. List of simultaneous main-and-remote-control-units-key-press functions

Step	Keys to be pressed on the main unit and on the remote control unit	Functions
1 2	FL display key and 0 key FL display key and STOP key	(1) Debugging mode ON/OFF This function puts the unit in the debugging mode from another mode, or puts the unit in the mode other than the debugging mode from the debugging mode. For details on the debugging mode, refer to 8-5. "OPERATION OF THE MDP-A7/800 IN THE DEBUGGING MODE".
1 2	FL display key and 0 key FL display key and screen display key	(2) Forced V muting ON/OFF This function releases the unit from the forced V muting condition if it is in the forced V muting condition, or puts the unit in the forced V muting condition if it is not in the forced V muting condition. It can be used to obtain a blue background during playback, or removing the blue background while the unit is in the stop mode.
1 2	FL display key and 0 key FL display key and clear key	(3) Resetting of V muting This function resets the unit in the V muting condition to normal condition. That is, it releases the unit from condition (2) above.
1 2	FL display key and 0 key FL display key and +10 key	(4) Make mechanism controller time out ineffective. Make the function turning power off ineffective when communication with mechanism controller cannot be done. When mechanism controller doesn't operate, it used to hasten to operate mode controller.
1 2	FL diaplay key and 0 key FL diaplay key and 0 key	(5) Make mechanism controller time out effective. Make the function turning power off effective when communication with mechanism controller cannot be done.

8-4. OPERATION OF THE MDP-A7/800 IN THE SERVICE MODE

1. Explanation of the service mode

The functions for the use on reparation and maintenance (the service mode) are incorporated in the MDP-A7/800. The mode in which those functions are available is called "the service mode". The following are the differences between the service mode and the normal operation mode.

(1) Special operations such as focusing search and sledding can be carried out.

(2) Power is not turned off automatically in an emergency condition of power off.

(3) When entering the service mode, also the debugging mode is started automatically. (For details of the debugging mode, refer to 8-5. "OPERATION OF THE MDP-A7/800 IN THE DEBUGGING MODE".

2. Entering the service mode

The following procedure shows how to enter the service mode.

(1) While the power is turned off, connect the test pin (TP501 for service mode setting) on the MB board of the main unit, to the ground.

(2) Turn on the power by pressing the power key of the main unit. Nothing is displayed on the screen at this moment.

(3) Disconnect the test pin (the connection was performed in step (1) above) from the ground.
The service mode can be started when the background color changes in violet. If the background color is blue or black, the service mode is not available yet. If so, restart the procedure from step (1) above.
When the unit is in the service mode, it is also put in the debugging mode (the functions those available in both the modes can be used). Therefore, the version No. of the microprocessor appears on the screen. For details of the debugging mode, refer to 8-5. "OPERATION OF THE MDP-A7/800 IN THE DEBUGGING MODE".

3. Quitting the service mode

To quits the service mode, press the power key and turn off the power. If you cannot turn off the power in this way (the operation of the mechanisms is not complete), carry out the forced power off function by pressing the reverse direction scanning key and the power key on the main unit at the same time.

4. Operating with the special key functions

The special key functions in the service mode are available only under NO DISC and STOP conditions, for safety purposes.

Check that the indication for those conditions is displayed without flashing on the screen or on the FL display. In order to carry out the special key functions listed in table 8-3, in the status above, turn off the FL display, and then press the desired key such as PLAY or PAUSE on the main unit.

The sledding motion with the SIDE A or SIDE B key is effective only while holding the key pressed. However, the operation started with the PLAY or PAUSE key continues, once it is pressed, until you press the STOP key. While the unit is carrying out the special key function, the LED of side B of the main unit is lit.

Note that multiple special key functions cannot be started even if you press multiple keys at the same time.

When the FL display is turned off, some keys are not effective. Be sure to turn on the FL display if you don't want to carry out the special key functions.

Table 8-3. List of the special key functions

Key	Special key functions
SIDE A	Sledding in reverse direction (downward)
SIDE B	Sledding in normal direction (upward)
PLAY	Focusing search
PAUSE	Tilt servo ON
STOP	Stop special operations

The following are the details of the special key functions available with the MDP-A7/800.

(1) PLAY key for focusing search
Focusing search operation can be carried out repeatedly by holding down the PLAY key. There is no fault with the unit if the pick-up lens moves up and down.
Be sure to start the focusing search operation after checking the condition that the the sled is placed in appropriate position (at around the center of side A). To stop the focusing search operation, press the STOP key.

(2) SIDE A key for sledding in reverse direction
The sled can be moved in reverse direction (center of side B, to edge of side B, to edge of side A, and then to center of side A) after completing initialization of the tilt (the tilt is placed in neutral position) by holding down the SIDE A key. To stop the sledding in reverse direction, release the SIDE A key.

(3) SIDE B key for sledding in normal direction
As contrary to item (2) above, the sled can be moved in normal direction (center of side A, to edge of side A, to edge of side B, and then to center of side B). This movement of the sled is desired when replacing the optical part. To stop the sledding in normal direction, release the SIDE B key.

(4) PAUSE key for tilt servo ON
The tilt servo is activated while holding down the PAUSE key. Move the sled to around the center of side A with the SIDE A and SIDE B keys, and put a CD or equivalent on the tray so that it screens the skew sensor. Then, if the tilt moves by pressing the PAUSE key, operation is normal.
The tilt can be placed back in neutral position by moving the sled with the SIDE A and SIDE B keys. To deactivate the tilt servo, press the STOP key.

8-5. OPERATION OF THE MDP-A7/800 IN THE DEBUGGING MODE

1. Explanation of the debugging mode

The contents in the RAM of the microprocessor can be displayed on the screen for the repair and maintenance purposes. The status of the MDP-A7/800 in which this debugging function is available is called "the debugging mode".

The following are the differences between the debugging mode and the normal operation mode.

(1) The background color of the screen changes in green when the FL display is turned off.

(2) Under the status described item (1) above, pressing the key on the remote control unit displays the history of emergency conditions or other debugging information.
Some keys are not effective when the FL display is turned off.

2. Entering the debugging mode

To enter the debugging mode from a normal operation mode (in a normal status of operation), turn on the unit, press the 0 key and then the STOP key on the remote control unit while holding down the FL display key on the main unit.

When the following display appears on the screen, the unit is in the debugging mode. This display shows the version No. of the microprocessor. For details, refer to 5. (1) "[FRAME/TIME] key for displaying version No. of the microprocessor".

In the debugging mode, when the FL display is turned off in the stop or some other modes, the background color changes in green. (Note that it is violet in the service mode.)

```
           1 2 3 4 5 6 7 8 9101 2 3 4 5 6 7 8 9201 2 3 4
1st line                                            S T O P
2nd line   V E R
3rd line   M M I - 7 1 0 A   1 2 / 2 5 A
4th line
5th line
6th line
7th line   M C M -   7 1 0 A   9 3 1 2   2 5 0 A
8th line
9th line
10th line
```

Fig. 8-1. Initial display in the debugging mode

3. Quitting the debugging mode

To quits the debugging mode, press the clear key on the remote control unit when the menu (version No. of the microprocessor indication in FL display off) in figure (8-1) is displayed.
The same key operation as step (2) also sets the mode back in the normal operation mode.

4. Changing the display on the screen

The display is set for "debugging display" immediately after entering the debugging mode. The display mode can be changed in the same manner as in the normal operation mode by pressing the screen display key. In the debugging mode, however, "debugging display" mode can be selected as one of the display modes, in addition to "no display (displays nothing in most cases)", "small display (displays only the 1st line in most cases)", and "large display (displays full screen in most cases)" modes.
Pressing the screen display key in the normal operation mode changes the display mode as follows:

No display → Small display → Large display →

Pressing the screen display key in the debugging mode changes the display mode as follows:

No display → Small display → Large display → Debugging display →

5. Explanation of the debugging display

In the debugging display mode, the information on the mode controller is displayed on the screen as a dump list. The title is displayed at the left on the 2nd line from the top. The data is displayed on the 3rd line through the 9th line.
The display of the data in one line consists of up to four sets (total of 8 bytes) of four character (2 bytes character each) sets in hexadecimal notation.
The information to be displayed can be selected in the debugging mode, by turning off the FL display and pressing the desired key (as listed below).
The following table lists the information which are currently available and which can be displayed.

Table 8-4. List of the keys to be used in the debugging mode and corresponding information

Keys	Information to be displayed
[FRAME/TIME]	Version No. of the microprocessor
[1]	History of the function modes
[2]	History of the emergency occurrence
[3]	Information for repair service of normally
[4]	Trap-flag
[5]	Key/remote control data
[7]	Information on communication with the mechanism controller

(1) [FRAME/TIME] key for displaying version No. of the microprocessor
Pressing this key displays the version No. of the microprocessor. The version No. of the mode controller appears on the 3rd line, and that of the mechanism controller appears on the 7th line. An example in figure 8-2 shows that the version No. of the mode controller is "MMI-710A 12/25A" and that of the mechanism controller is "MCM-710A 93/12/25A".

```
           1 2 3 4 5 6 7 8 9101 2 3 4 5 6 7 8 9201 2 3 4
 1st line                                           S T O P
 2nd line  V E R
 3rd line  M M I - 7 1 0 A   1 2 / 2 5 A
 4th line
 5th line
 6th line
 7th line  M C M -   7 1 0 A   9 3 1 2   2 5 0 A
 8th line
 9th line
10th line
```

Fig. 8-2. Version No. of the microprocessor

(2) [1] key for displaying the history of the function modes
Pressing this key displays the history of the principal operation commands (which represent function modes) sent from the mode controller to the mechanism controller.
Up to 8 histories of the function modes can be displayed on a line. A total of 16 histories of the function modes are available using two lines. Unless the unit is unplugged, the data are kept intact in memory even when the unit is turned off.
The data to be stored appears on the screen from left to right 1 byte by 1 byte, and "FF" appears to the right of the last data byte. The data byte continues from the right end on the 1st line to the left end on the 2nd line, and from the right end on the 2nd line to the left end on the 1st line.
The last stored data of the function modes (which is the mode selected at present) appears on the left of "FF". That is, when "FF" appears at the left end on the 1st (or the 2nd) line, the last stored data appears at the right end on the 2nd (or the 1st respectively) line.
"FE" means there has been an emergency case at the data point. To check the type of the emergency case, refer to 5. (3) "[2] key for displaying the history of the emergency occurrence".

```
           1 2 3 4 5 6 7 8 9101 2 3 4 5 6 7 8 9201 2 3 4
          +------------------------------------------------+
 1st line |                                         S T O P|
 2nd line | F M   H I S T                                  |
 3rd line |         0 1 2 0   3 0 F E   5 0 6 0   7 0 6 0  |
 4th line |         2 0 F F   0 0 0 0   0 0 0 0   0 0 0 0  |
 5th line |                                                |
 6th line |                                                |
 7th line |                                                |
 8th line |                                                |
 9th line |                                                |
10th line |                                                |
          +------------------------------------------------+
```

Fig. 8-3. History of the function modes

Figure 8-3 shows that the function modes have changed as follows:

01 (Power on start up)
→20 (Stop)
→30 (Start up of side A)
→FE (An emergency occurred.)
→50 (Searching a chapter)
→60 (Playback)
→70 (Slow speed scanning in normal direction)
→60 (Playback)
→20 (Stop) [The last function mode]

Table 8-5 lists the function modes.

Table 8-5. List of the function modes

00	Power OFF
01	Power ON and start up
10	Open
20	Stop
30	Preparation for playback of side A
40	Preparation for playback of side B
50	Searching a chapter
51	Searching a frame/time
60	Playback
61	Pause
70	Slow speed scanning in normal direction
71	High speed scanning in normal direction
72	Slow speed scanning in reverse direction
73	High speed scanning in reverse direction
80	Still playback in normal direction
81	Step playback in normal direction
82	1/90 times speed playback in normal direction
83	1/30 times speed playback in normal direction
84	1/16 times speed playback in normal direction
85	1/8 times speed playback in normal direction
86	1/4 times speed playback in normal direction
87	1/2 times speed playback in normal direction
88	Normal (1 time) speed playback in normal direction
89	2 times speed playback in normal direction
8A	3 times speed playback in normal direction
8B	5 times speed playback in normal direction
8C	10 times speed playback in normal direction
90	Still playback in reverse direction
91	Step playback in reverse direction
92	1/90 times speed playback in reverse direction
93	1/30 times speed playback in reverse direction
94	1/16 times speed playback in reverse direction
95	1/8 times speed playback in reverse direction
96	1/4 times speed playback in reverse direction
97	1/2 times speed playback in reverse direction
98	Normal (1 time) speed playback in reverse direction
99	2 times speed playback in reverse direction
9A	3 times speed playback in reverse direction
9B	5 times speed playback in reverse direction
9C	10 times speed playback in reverse direction
FE	Appears for indicating an occurrence of emergency
FF	Appears next to the last data.

(3) [2] key for displaying the history of the emergency occurrence

Pressing this key displays the history of the emergency occurrence with the codes sent from the mechanism controller to the mode controller.

The data will be " ○○ " if there has been no emergency case since when the unit has been plugged in.

The display type is the same as that for the history of the function modes. However, up to 8 histories using only one line are available in this case. The emergency code which appears just before "FF" corresponds to the data of "FE" in the history of the function modes, which is the closest one to "FF".

```
           12345678910123456789201234
1st line                         STOP
2nd line   EMG HIST
3rd line        6074 6461 6464 74FF
4th line
5th line
6th line
7th line
8th line
9th line
10th line
```

Fig. 8-4. History of emergency

Figure 8-4 shows that the emergency has occurred in the following order because the data next to "FF" is 60 on the left of the line.

60 (Detection of lead-in point)
→ 74 (Focusing failed)
→ 64 (Detection of minimum chapter)
→ 61 (Detection of lead-out point)
→ 64 (Detection of minimum chapter)
→ 64 (Detection of minimum chapter)
→ 74 (Focusing failed) [The last emergency]

Table 8-6 lists the emergency codes.

Table 8-6. List of the emergency codes

◎ For operation of forced modes condition		Operation after occurence
01	Requirement of forced power off	Power off
02	Requirement of forced ejection of the tray	Eject
03	Requirement of stop	Stop
04	Requirement of stop when opening the door	Stop
05	Requirement of forced playback	Play
06	Requirement of determination for mode change when power off	Freezes power off display
07	Requirement of power off after communication stops.	Power off
◎ For operation of mechanisms		
10	Detection of movement for pushing in the tray	Play
11	Detection of no movement of the tray	Power off
20	Detection of no movement of the sleder	Power off
30	Detection of no movement of the tilt	Power off
◎ For operation of Spindle control		
40	No detection of the spindle FG	Power off
41	No achievement of continuous servo lock from FG servo to H servo	Stop
42	Above the high rotation limit	Stop
43	Below the low rotation limit	Stop
44	No complete stop operation for the spindle movement	Power off
45	Time over error for the spindle control operation	Power off
◎ For start up operation		
50	Focusing failed	Stop
51	Focusing failed (with a disc loaded)	Stop
52	Detected as if the disc was an LD	None
53	Focusing of LD8 failed	Stop
54	Reading of TOC failed on a disc of CD or CDV	Stop
◎ For playback operation		
60	Detection of the lead-in code	Play or soon
61	Detection of the lead-out code	Stop/Pause or soon
62	Detection of the lead-out of part A on CDV	Stop/Pause or soon
63	Detection of a picture stop	Still
64	Detection of the minimum chapter	None
65	Reading of sub code failed on a disc of CD or CDV	Stop
66	Reading of philips code failed and disc of LD	Stop
◎ For search operation		
70	Detection of over search	Play
71	Detection of under search	Play
72	Time over for the search operation	Play
74	Focusing failed during searching	Stop
◎ The following emergency occurs in mode contoller		
80	Emergency time out	Power off
81	Search time out	Play
82	Mechanism controller communication time out	Power off

(4) [3] key for displaying the information for repair service, sent from the mechanism controller

Pressing this key displays the information sent from the mechanism controller, which is necessary for repair service.

At present, the information listed in table 8-7 is available. Data numbers in the table correspond to the numbers on the 3rd line through the 5th line in figure 8-5.

Table 8-7. Information for repair service, sent form the mechanism controller

Data number	**Data**
(02)	Mode of mechanisms (internal mode of the mechanism controller) See the following section for details.

```
           1 2 3 4 5 6 7 8 9101 2 3 4 5 6 7 8 9201 2 3 4
 1st line                                             S T O P
 2nd line  S E R V I C E
 3rd line          (00)(01)  (02)(03)  (04)(05)  (06)(07)
 4th line          (08)(09)  (10)(11)  (12)(13)  (14)(15)
 5th line          (16)(17)  (18)(19)  (20)(21)  (22)(23)
 6th line
 7th line
 8th line
 9th line
10th line
```

Fig. 8-5. Information for repair service sent form the mechanism controller

◎ About the operation modes of the mechanisms

The operation modes of the mechanisms are the basic operation mode in the mechanism controller. Those almost the same as those available with the unit as the function modes. But, there are several supplemental modes for the mechanisms.

The table below shows the operation modes of the mechanisms.

Table 8-8. Operation modes of the mechanisms

Modes of the mechanisms	**Functions**
00	Power off
01	Initialization of the mechanism controller (Without operating the mechanisms)
03	In the process from power ON to power OFF
04	In the process from power OFF to power ON
05	Initialization of the mechanisms and related ICs.
10	Ejected status of the tray
11	In the process of ejection of the tray
12	In the process of loading of the tray
20	In stop status with the disc chucking up
21	In the process of chucking up form chucking of side A
22	In the process of chucking of side A from chucking up
23	In chucking status of side A
30	Until focusing of side A has been achieved
31	From lock of focusing to start-up of 0 search
32	In operation from side A/B to stop
33	In process of reversing side B form side A
40	Until focusing of side B has been achieved
50	Chapter search
60	Frame/Time search
61	Pause
70	Slow speed normal direction scanning
71	High speed normal direction scanning
72	Slow speed reverse direction scanning
73	High speed reverse direction scanning
74	In the process of scanning completion
80~	FF (The same as function mode)

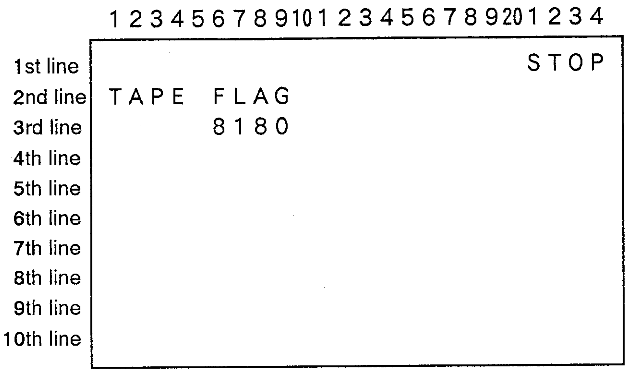
(5) [4] key for displaying the trap-flags

Pressing this key displays the cause of "an abnormal power off" of the mode controller (this excludes when it is turned off with the power key).

The one byte at the right (2 digits of hexadecimal notation) is the flag which has specific meaning. The bit which corresponds to the cause of the last abnormal power off is set 1.

The one byte at the left is the flag for all (logic OR of) the causes of abnormal power off since when the unit has been plugged in.

Both the flags can be set cleared by pressing the clear key when the FL display is turned on and this screen is displayed.



```
           1 2 3 4 5 6 7 8 9101 2 3 4 5 6 7 8 9201 2 3 4
1st line                                           S T O P
2nd line   T A P E   F L A G
3rd line             8 1 8 0
4th line
5th line
6th line
7th line
8th line
9th line
10th line
```

Fig. 8-6. Trap-flag

An example of the trap-flag shown in figure 8-6 shows that there have been two cases of abnormal power off before; 80 by abnormal voltage level and 01 by forced reset by the user (see the byte 81 in hexadecimal notation on the left). It also shows that the last abnormal power off has been caused by 80 (abnormal voltage level) (see the byte 80 in hexadecimal notation on the right).

Table 8-9. Trap-flag and bits and their meaning

Bit number (Pattern)	Causes
7 (80h)	Power off caused by abnormal voltage level
6 (40h)	Power off caused by abnormal communication with the mechanism controller
5 (20h)	Power off caused by an occurrence of emergency
4 (10h)	Forced power off by the key operation
3 (08h)	Resetting by self-check of the mode controller
2 (04h)	Resetting by self-check of the mode controller
1 (02h)	Resetting by self-check of the mode controller
0 (01h)	Forced resetting by the key operation

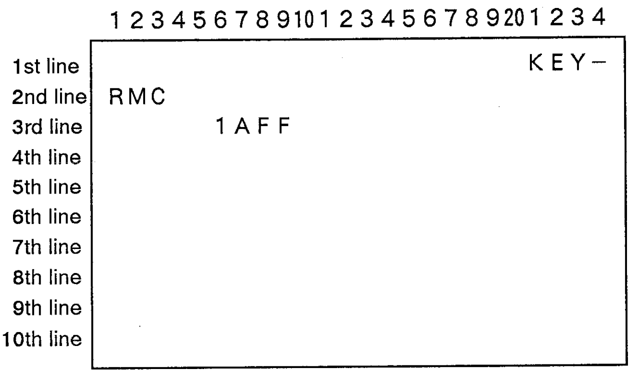
Note: Resetting, which is indicated with bits 0 to 3 in the table, means that setting the status of the mode controller back to the same status as that when the unit was plugged in, except for initialization of the trap-flag.
A of hexadecimal notation is 2+8. In the same manner, B=1+2+8, C=4+8, D=1+4+8, E=2+4+8, F=1+2+4+8.

(6) [5] key for displaying the key/remote control data

Pressing this key displays the key input data of the main unit and the input data by the remote control unit, using SIRCS codes. Note that this operation is effective on the remote control unit for MDPs only.

The one byte (2 digits in hexadecimal notation) on the left of the 3rd line in figure 8-7 is the SIRCS code of the key input data of the main unit, and that on the right is the SIRCS code of the input data by the remote control unit. When no key is pressed or there is no input, "FF" appears. When two keys are pressed almost at the same time, the SIRCS code of the input data by the first pressed key will appear.

The keys to which SIRCS codes are not assigned (i.e. KARAOKE PON key) are defined as internal keys, using the data of 80 or higher in hexadecimal notation.



```
           1 2 3 4 5 6 7 8 9101 2 3 4 5 6 7 8 9201 2 3 4
1st line                                           K E Y -
2nd line   R M C
3rd line             1 A F F
4th line
5th line
6th line
7th line
8th line
9th line
10th line
```

Fig. 8-7. Key and remote control data

An example in figure 8-7 shows that the playback key (1A in hexadecimal notation) on the main unit is pressed but there is no input (FF in hexadecimal notation) from the remote control unit.

However, note that, in some cases, the remote control unit generates SIRCS codes momentarily only at the moment when the key is pressed.

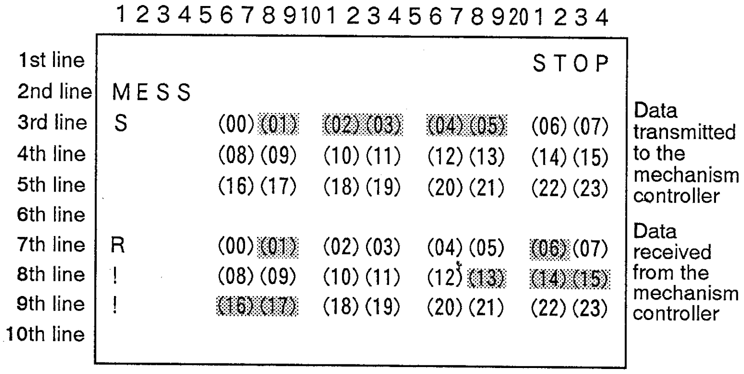
Table 8-10. List of SIRCS codes for MDPs

00	Numeral 1
01	Numeral 2
02	Numeral 3
03	Numeral 4
04	Numeral 5
05	Numeral 6
06	Numeral 7
07	Numeral 8
08	Numeral 9
09	Numeral 0
0B	Search/sledding
0C	Frame/time
0F	Clear
15	Power ON/OFF
16	Close/open of tray
17	Audio monitoring
18	Stop
19	Pause
1A	Playback
1B	High speed reverse direction scanning
1C	High speed normal direction scanning
1E	Slow speed reverse direction scanning
1F	Slow speed normal direction scanning
20	Still
21	Acceleration of speed
22	Deceleration of speed
23	Fast/slow motion playback in normal direction
24	Fast/slow motion playback in reverse direction
25	Playback by memory
28	Time display
29	Repeat
2B	Step in normal direction
2C	Step in reverse direction
30	Program
34	ACS in normal direction
35	ACS in reverse direction
38	A-B repeat
39	Numeral + 10
3A	Screen display
40	Analog audio/CX
41	Shuffle
44	Return
45	Automatic program
46	Automatic pause
47	1/one side/double side
4F	Medium speed normal direction playback
50	Medium or slow speed normal direction playback
51	Slow speed normal direction playback
52	Normal direction jog step
55	Reverse direction jog step
56	Slow speed reverse direction playback
57	Medium or slow speed reverse direction playback
58	Medium speed reverse direction playback
5D	side A
5E	side B
68	Intro-scanning
71	Stop motion
72	Picture call
73	Flash motion
7A	Picture enhancement
81	FL display ON/OFF
82	LD quick start
83	Change of CAV still
FF	Appears when there is no input.

(7) [6] key for displaying the information on communication with the mechanism controller

Pressing this key displays the communication data with the mechanism controller.

The data transmitted from the mode controller to the mechanism controller appears on the 3rd line through the 5th line. The data transmitted from the mechanism controller to the mode controller appears on the 7th line through the 9th line. The exclamation marks ! at the left on the 8th and the 9th lines indicate that the communication is carried out successfully. Question mark ? appears if communication stops. A bracket mark [■] appears if communication stops after carrying out once the communication on the purpose of servicing.



```
                                    S T O P
M E S S
S         (00)(01)  (02)(03)  (04)(05)  (06)(07)
          (08)(09)  (10)(11)  (12)(13)  (14)(15)
          (16)(17)  (18)(19)  (20)(21)  (22)(23)

R         (00)(01)  (02)(03)  (04)(05)  (06)(07)
!         (08)(09)  (10)(11)  (12)(13)  (14)(15)
!         (16)(17)  (18)(19)  (20)(21)  (22)(23)
```

Fig. 8-8. Information on communication with the mechanism controller

The table below shows some communication information.

Table 8-11. Principal communication information

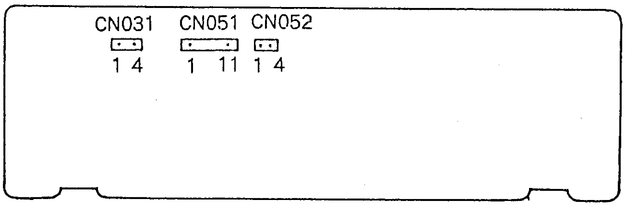
Data from the mode controller to the mechanism	
(01)	The function mode at present (next)
(02)	The function mode of final purpose
(03 – 05)	Target address of search (Time/Frame)
Data from the mechanism controller to the mode controller	
(01)	The function mode at present (next)
(06)	The flag for completion of function mode change (0 bit)
(13)	Current chapter/track number
(14)	Current index number
(15 – 17)	Current address (Time/Frame)

8-6. POWER SUPPLY CHECK (PS-713 BOARD)

Mode	Stop
Measuring equipment	Digital voltmater
UNREG +16 V check	
Measurement point	Pin ① of CN051 (Pin ②, GND)
Specified value	16.0 ± 1.0 V
UNREG −16 V check	
Measurement point	Pin ③ of CN051 (Pin ③, GND)
Specified value	−16.0 ± 1.0 V
REG +8 V check	
Measurement point	Pin ③ of CN053 (Pin ②, GND)
Specified value	8.0 ± 0.5 V
REG −8 V check	
Measurement point	Pin ① of CN053 (Pin ③, GND)
Specified value	−8.0 ± 0.5 V
POWER MUTE check	
Measurement point	Pin ④ of CN051 (Pin ②, GND)
Specified value	17.0 ± 1.0 V
EVER 5 V check	
Measurement point	Pin ④ of CN031 (Pin ②, GND)
Specified value	5.0 ± 0.3 V

- Confirm that the power supply voltages satisfy the respective specified values.

PS-713 Board (Conductor Side)



8-7. SYSTEM CONTROL SYSTEM ADJUSTMENT

8-7-1. Microprocessor Clock Adjustment (MB-702 Board)

Mode	Stop
Measurement point	Pin ① of CN102
Measuring equipment	Frequency counter
Adjusting Element	CT001
Specified value	14,318,180 ± 40 Hz

Adjustment method:

1) Adjust CT001 to 14,318,180 ± 40 Hz.

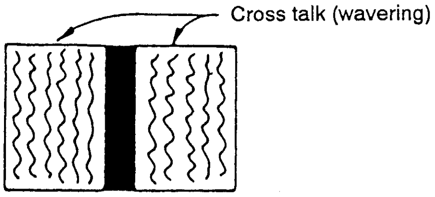
8-8. SERVO SYSTEM ADJUSTMENT

8-8-1. Side A Tilt Balance Adjustment (MB-702 Board)

Mode	Still
Signal	Frame 770 (V BAR)
Measurement point	Monitor TV
Measuring equipment	Monitor TV
Adjustment element	RV401
Specified value	Cross talk (wavering) with minimum as well as the same level.

Adjustment method:

1) Select STILL (▶◀) mode.
2) Search the frame 770 and apply a vertical bar signal.
3) Adjust RV401 so that the right and left cross talks (wavering) become minimum as well as the same level.



Adjust so that cross talks appeared on the both sides on the monitor display become minimum as well as the same level.

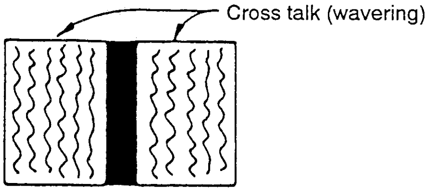
Fig. 8-9.

8-8-2. Side B Tilt Balance Adjustment (MB-702 Board)

Mode	Still
Signal	Frame 770 (V BAR)
Measurement point	Monitor TV
Measuring equipment	Monitor TV
Adjustment element	RV402
Specified value	Cross talk (wavering) with minimum as well as the same level.

Adjustment method:

1) Select STILL (▶◀) mode.
2) Search the frame 770 and apply a vertical bar signal.
3) Adjust RV402 to minimize the right and left cross talks (wavering) level.


Cross talk (wavering)

Adjust so that cross talks appeared on the both sides on the monitor display become minimum as well as the same level.

Fig. 8-10.

8-9. VIDEO SYSTEM ADJUSTMENT

8-9-1. Video Output Level Adjustment (MB-702 Board)

Mode	Still
Signal	Frame 4100 (Color bar)
Measurement point	J201(VIDEO OUT terminal) (Terminated to 75 Ω)
Measuring equipment	Oscilloscope
Adjustment element	RV001
Specified value	1.00 ± 0.02 Vp-p

Adjustment method:

1) Select STILL (▶◀) mode.
2) Search the frame 4100 and apply a vertical bar signal.
3) Adjust RV001 for 1.00 ± 0.02 Vp-p.

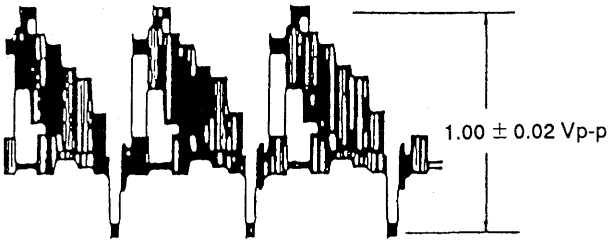
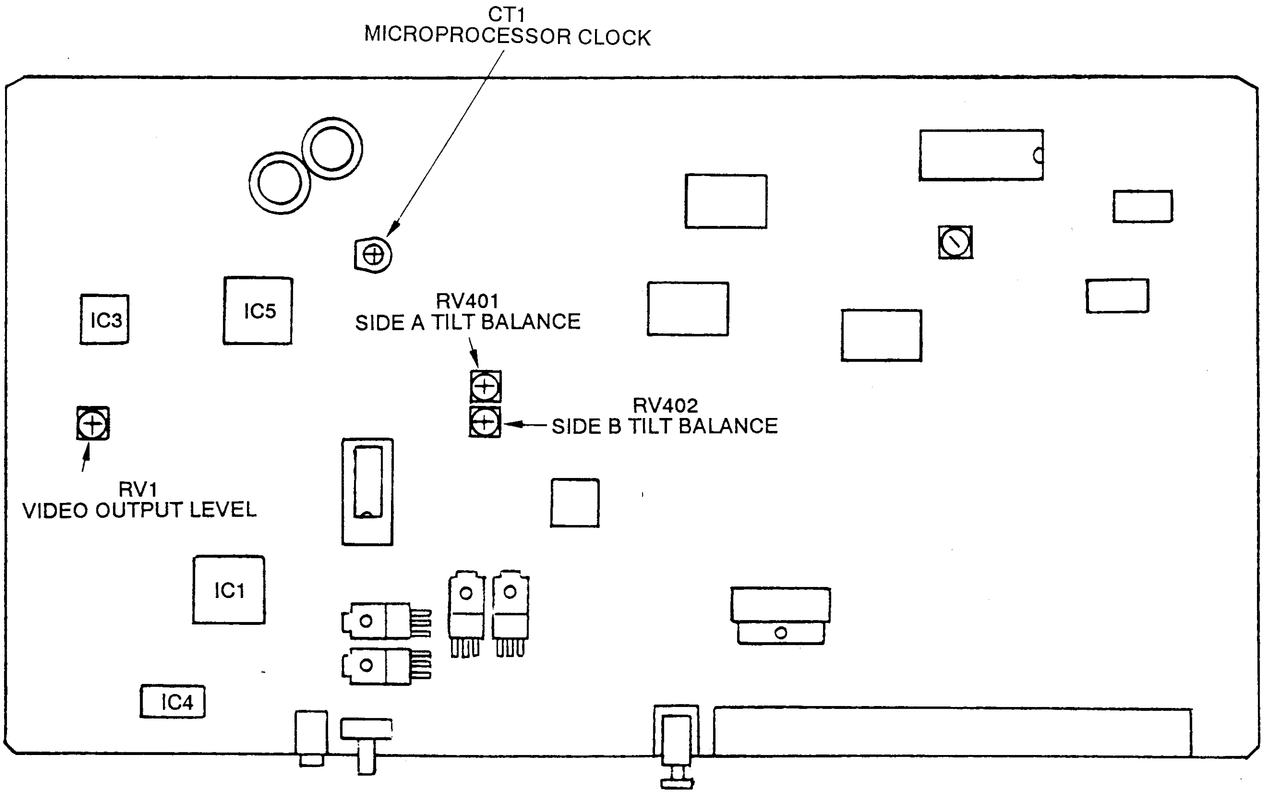


Fig. 8-11.

8-10. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENT

MB-702 Board (Component Side)


CT1
MICROPROCESSOR CLOCK
IC3
IC5
RV401
SIDE A TILT BALANCE
RV402
SIDE B TILT BALANCE
RV1
VIDEO OUTPUT LEVEL
IC1
IC4

9-973-432-11

Sony Corporation
Home Video Group

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MDP-A7/800
RMT-M20A

SONY®
SERVICE MANUAL

US Model
Canadian Model
MDP-800
E Model
MDP-A7

SUPPLEMENT-1

File this supplement with the service manual.

Subject:
- Removal and installation of the optical pick-up block revision.
- Adjustment after the attachment of the optical pick-up block.
- LD tilt balance adjustment correction.

☛ **: Added portion.**

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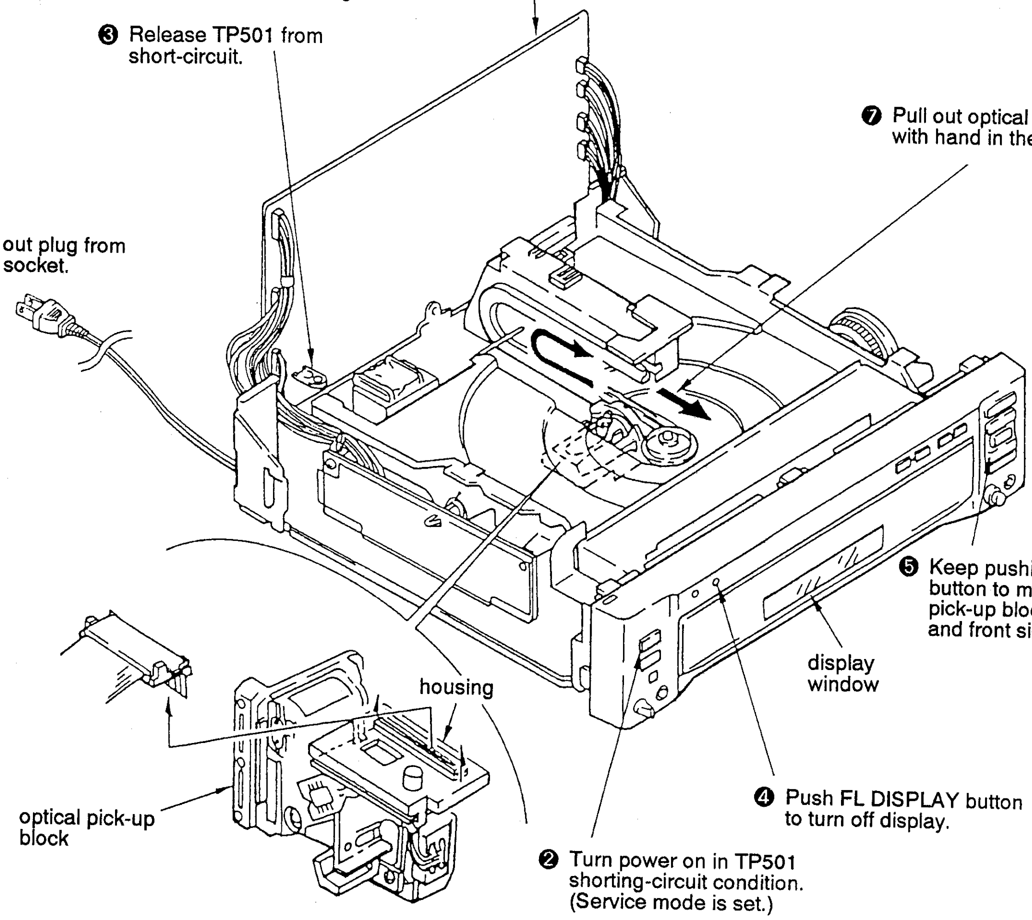
1. REMOVAL AND INSTALLATION OF THE OPTICAL PICK-UP BLOCK

- **REMOVAL I**
  (OPTICAL PICK-UP BLOCK MOTOR OPERATES)


MB-702 board
housing
display window
optical pick-up block

❶ Short-circuit TP501 to ground.

❷ Turn power on in TP501 shorting-circuit condition. (Service mode is set.)

❸ Release TP501 from short-circuit.

❹ Push FL DISPLAY button to turn off display.

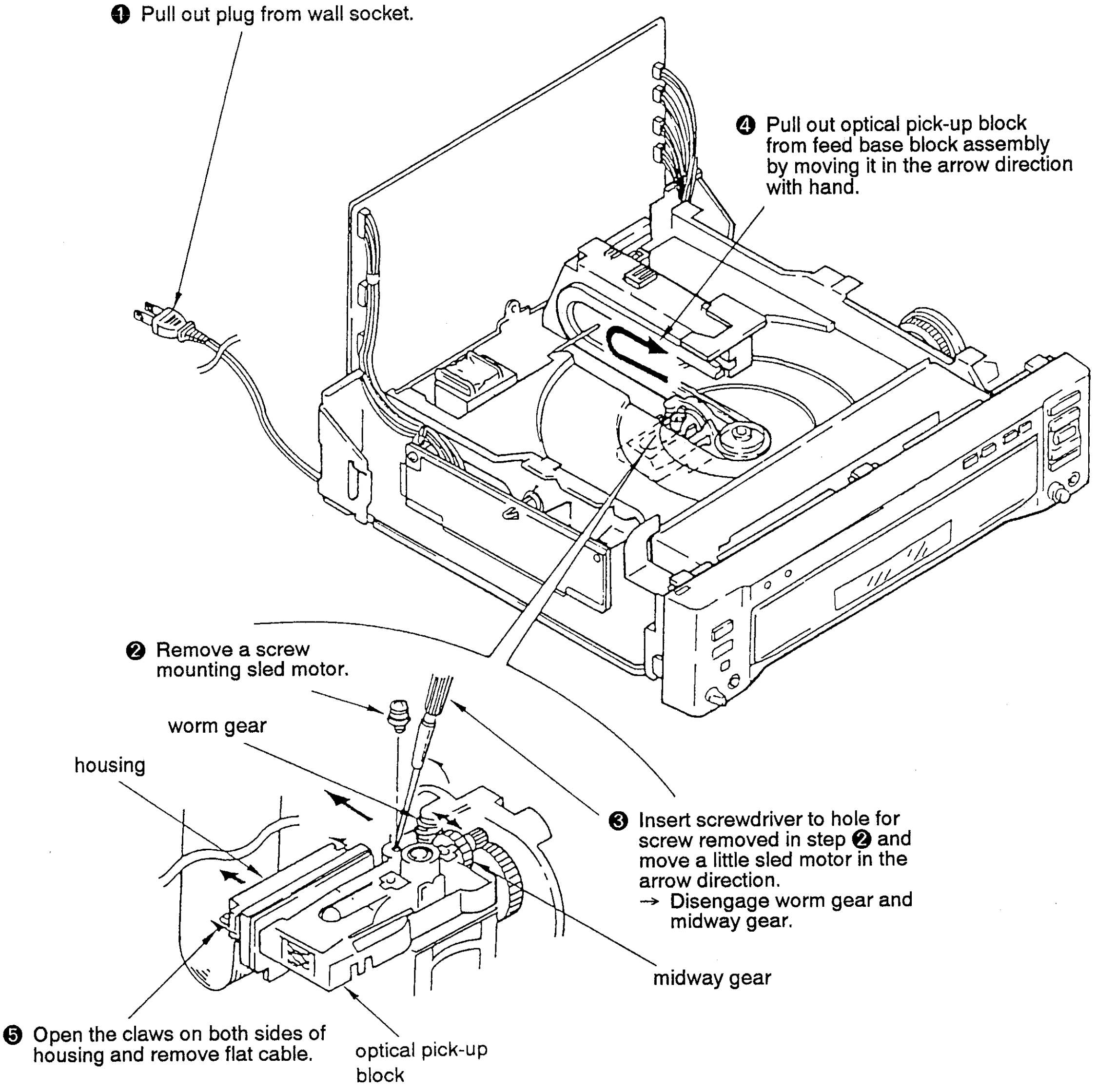
❺ Keep pushing SIDE B button to move optical pick-up block to upper and front side.

❻ Pull out plug from wall socket.

❼ Pull out optical pick-up block with hand in the arrow direction.

❽ Open the claws on both sides of housing and remove flat cable.

- **REMOVAL II**
  (OPTICAL PICK-UP BLOCK MOTOR DOESN'T OPERATES)



❶ Pull out plug from wall socket.

❷ Remove a screw mounting sled motor.

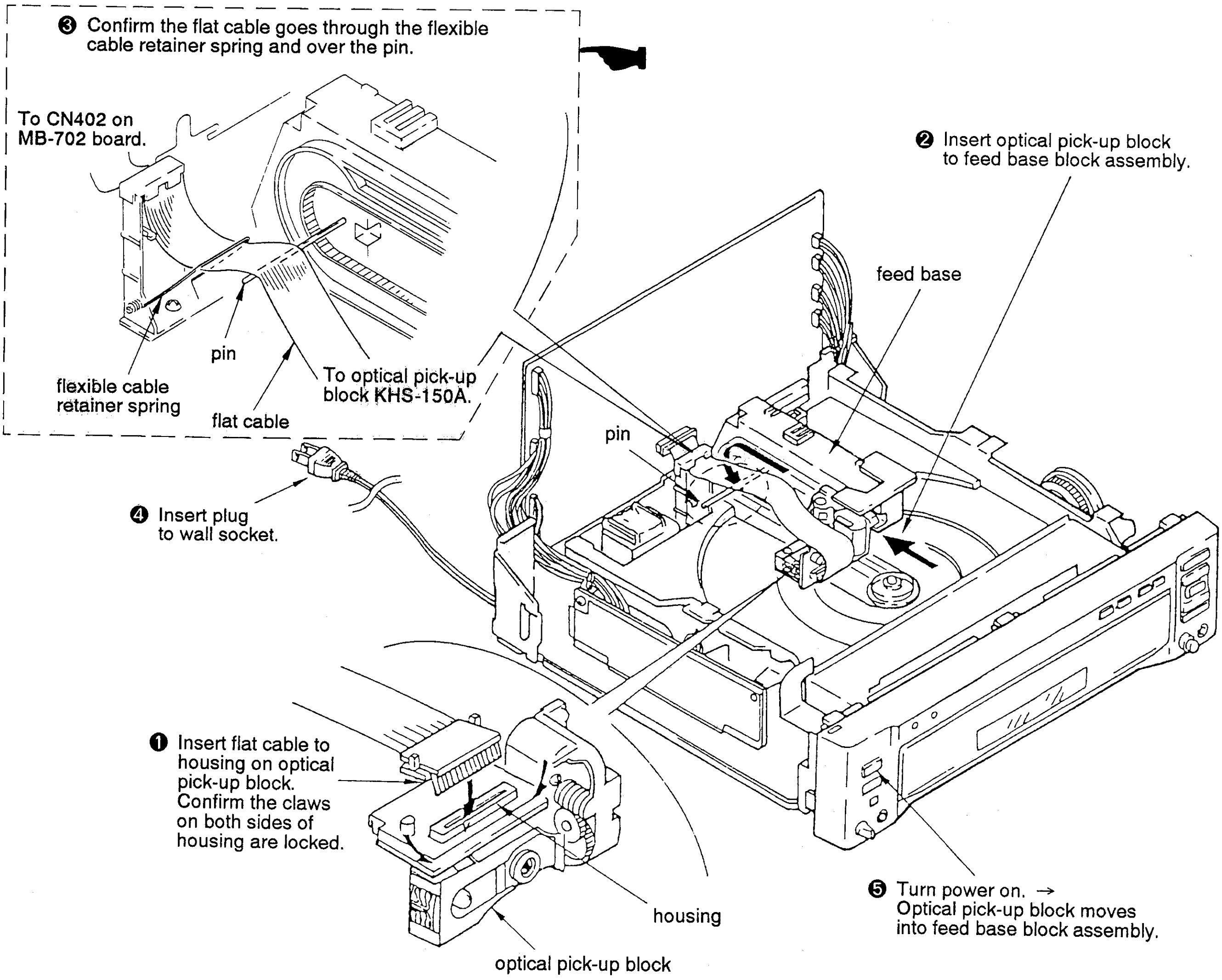
❸ Insert screwdriver to hole for screw removed in step ❷ and move a little sled motor in the arrow direction.
→ Disengage worm gear and midway gear.

❹ Pull out optical pick-up block from feed base block assembly by moving it in the arrow direction with hand.

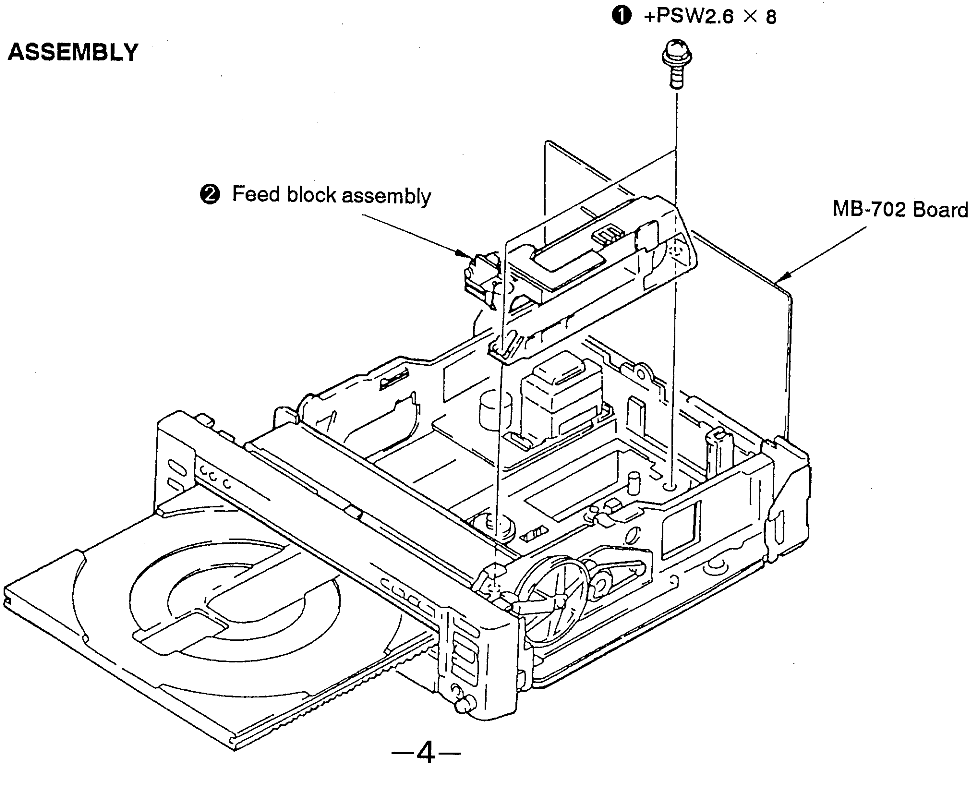
❺ Open the claws on both sides of housing and remove flat cable.

worm gear
housing
midway gear
optical pick-up block

- **INSTALLATION**


❸ Confirm the flat cable goes through the flexible cable retainer spring and over the pin.
To CN402 on MB-702 board.
pin
flexible cable retainer spring
flat cable
To optical pick-up block KHS-150A.
❷ Insert optical pick-up block to feed base block assembly.
feed base
pin
❹ Insert plug to wall socket.
❶ Insert flat cable to housing on optical pick-up block. Confirm the claws on both sides of housing are locked.
housing
optical pick-up block
❺ Turn power on. → Optical pick-up block moves into feed base block assembly.

- **FEED BLOCK ASSEMBLY**

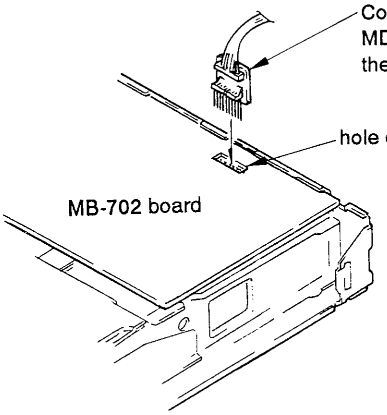

❶ +PSW2.6 × 8
❷ Feed block assembly
MB-702 Board

2 ADJUSTMENT AFTER THE ATTACHMENT OF THE OPTICAL PICK-UP BLOCK

2-1. JIGS AND TOOLS

- Hexagonal wrench (Tangential screwdriver: 7-700-766-04)
- Oscilloscope
- MD adjustment cable (J-6082-059-B)
- Alignment disc Ref. 8 (HLV8: 8-797-008-00)/LD YEDS-18 (3-702-101-01) or an equivalent/CD
- Decentering screwdriver 4 ϕ (J-6095-029-A)

* Insert the terminal of the MD adjustment cable to CN401 of the MB-702 Board.



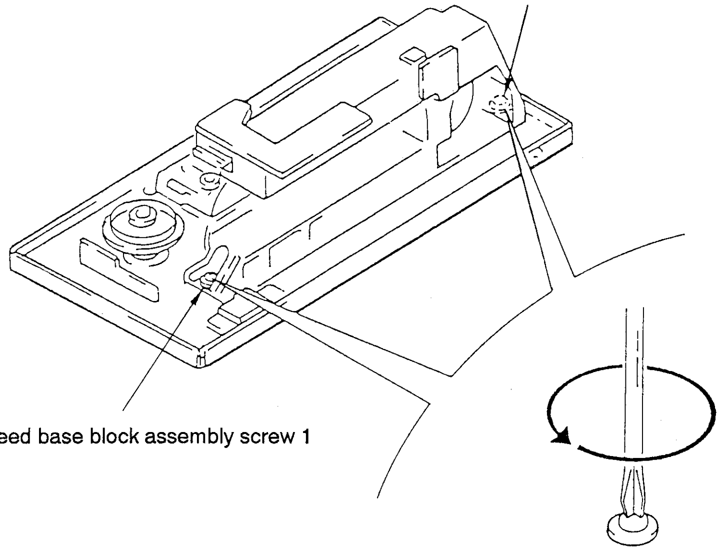
Connect the connector of the MD adjustment cable so that the pattern side is back.

hole of CN401

MB-702 board

2-2. CD ADJUSTMENT

① Loosen the screws of feed base block assembly.



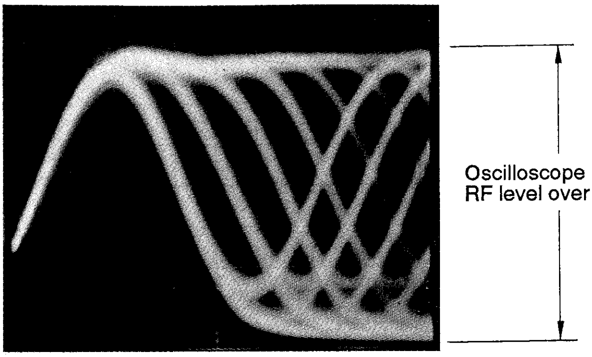
Feed base block assembly screw 2

Feed base block assembly screw 1

Loosen the screw about a turn from the state of being tight.

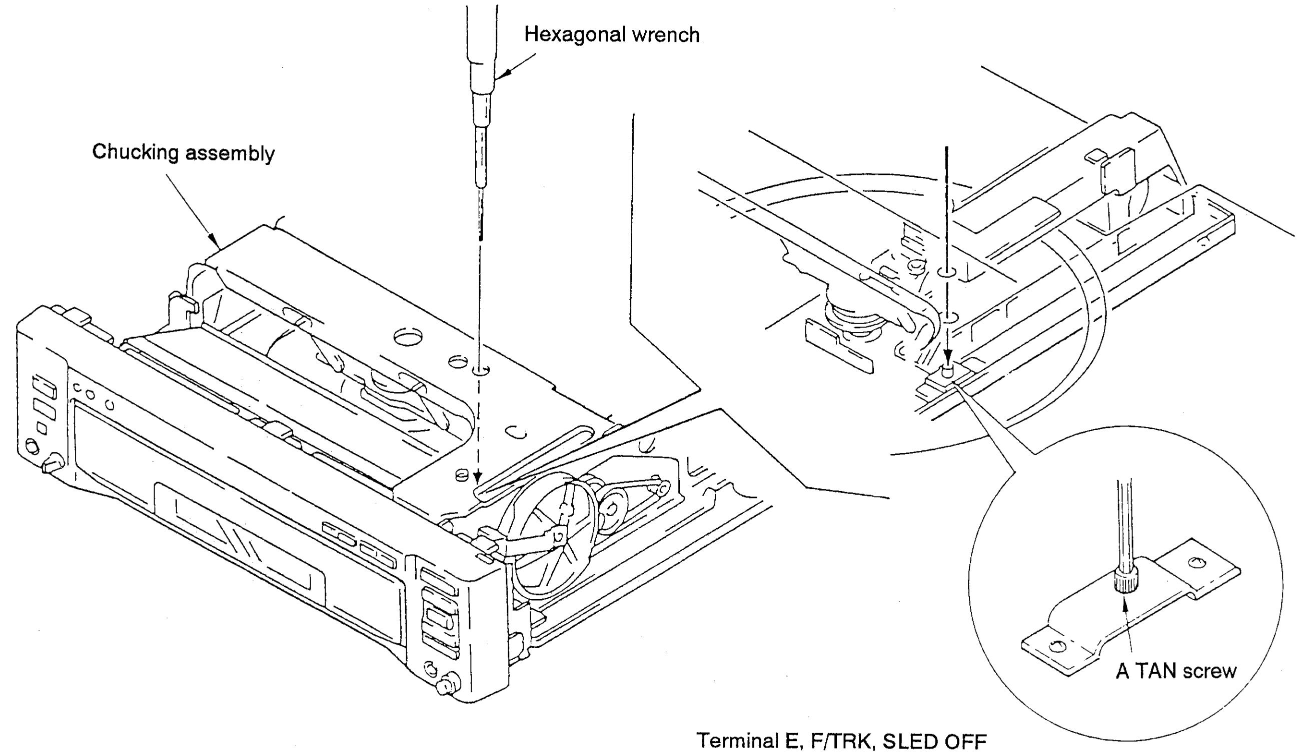
② Playback the CD to press the Pause button about 3 seconds later.

③ Connect the oscilloscope to LD RF of the MD adjustment cable to see if the waveform shown below appears.

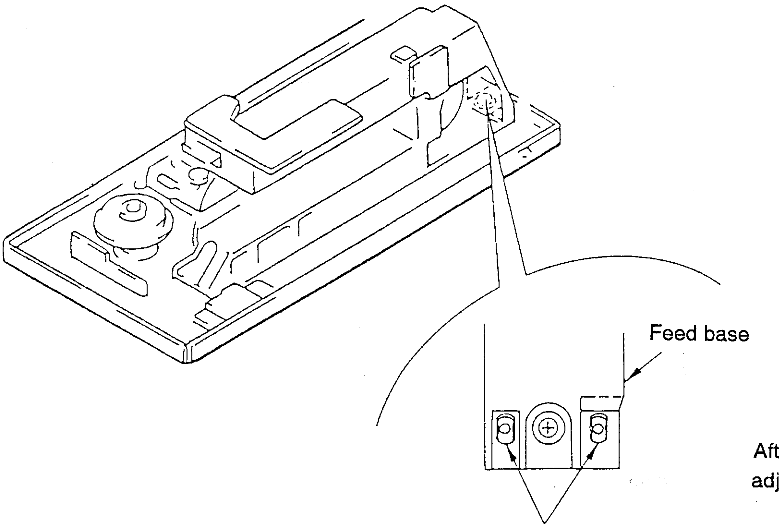


Oscilloscope range : 0.1 V/div.
RF level over : 1.7 Vp-p

④ Insert the A TAN screw with hexagonal wrench 2.6 into the hole of top surface of chucking assembly to adjust so that RF Level is maximum. (Over 1.7 Vp-p)



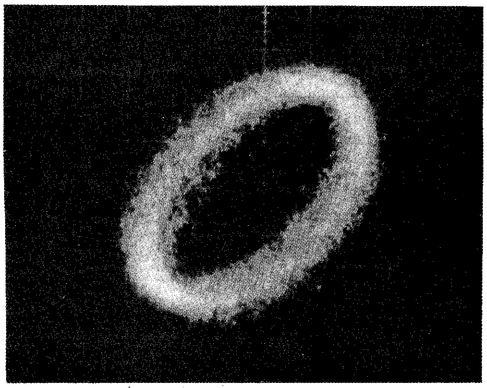
⑤ Insert decentering screwdriver into the feed base block assembly for RD adjustment.



Insert the decentering screwdriver to either one of the holes for adjustment.

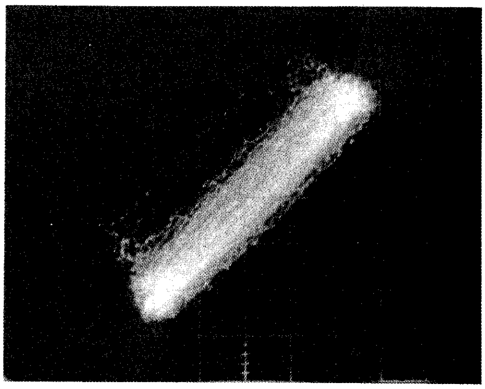
Terminal E, F/TRK, SLED OFF
Oscilloscope X/Y Lissagous range
Difference within 35 ° with each 20 mV/div.

Before the adjustment.



⇩ Make the figure straight.

After the adjustment.

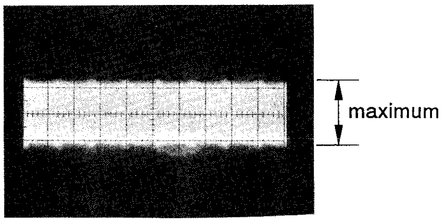


⑥ Take the DISC out to tighten the 2 screws of the feed base.
⑦ Apply suitable locking compound to A TAN screw.

2-3. LD SIDE A TILT BALANCE ADJUSTMENT

① Put the LD alignment disc HLV-8 in with the CAV side to the side A, play it and pause at the chapter 3 (#2201).

② Connect an oscilloscope to LD RF terminal on the MD adjustment cable and adjust RV401 so that the RF waveform goes maximum in the state the tracking and the sled are on.

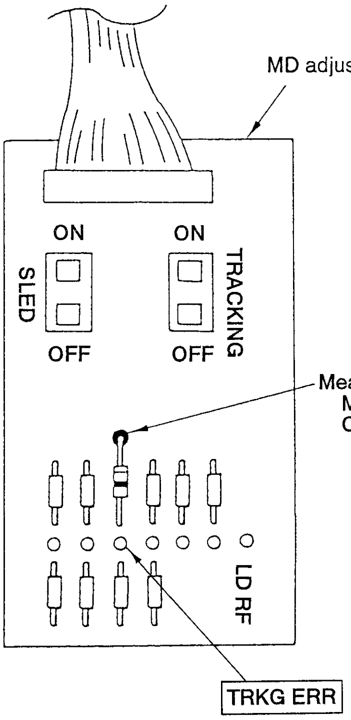


③ Play #770 and pause.

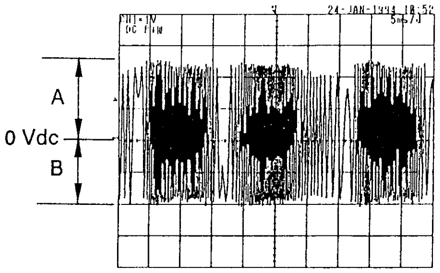
④ Check that the vertical bar appears on TV monitor and right and left crosstalks (moire) are the same level and minimum.
– Already adjusted at the optical pick-up block side –

⑤ Check the tracking bal.
Measure the registance at the Y terminal of TRACKING ERR on jig with oscilloscope.

Check the TRACKING BAL.



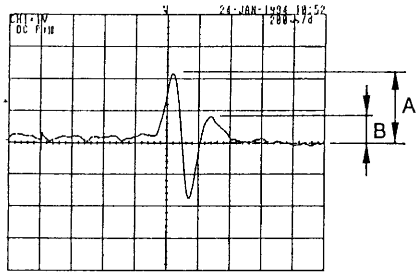
Measurement point.
Mode: TRACKING, SLED OFF
Oscilloscope: 1 V/div.



Check that it meets $-5 \leqq \frac{A-B}{2(A+B)} \times 100\ (\%) \leqq 8$

Then turn on the TRACKING and SLED to check the waveform of 1 track jump in STILL.

Check that it meets $B \leqq \frac{1}{2}A$

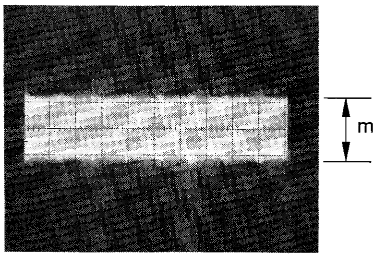


2-4. LD SIDE B TILT BALANCE ADJUSTMENT

① Loosen the side B RD screw and TAN screw (hexagonal screw 2.6) on the feed base.

② Put the LD alignment disc HLV-8 in with the CAV side to the side B, play it and pause at the chapter 3 (#2201).

③ Connect an oscilloscope to LD RF terminal on the MD adjustment cable and adjust RV402 so that the RF waveform goes maximum in the state the tracking and the sled are on.

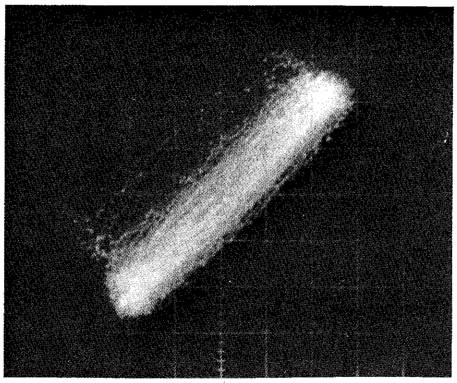


④ Insert an eccentric screwdriver to B TAN adjustment hole and adjust the RF waveform goes maximum similarly to the item ③.

⑤ Play #770 and pause.
At this time in the same manner as the side A, check that the vertical bar appears on TV monitor and right and left crosstalks (moire) are the same level and maximum.

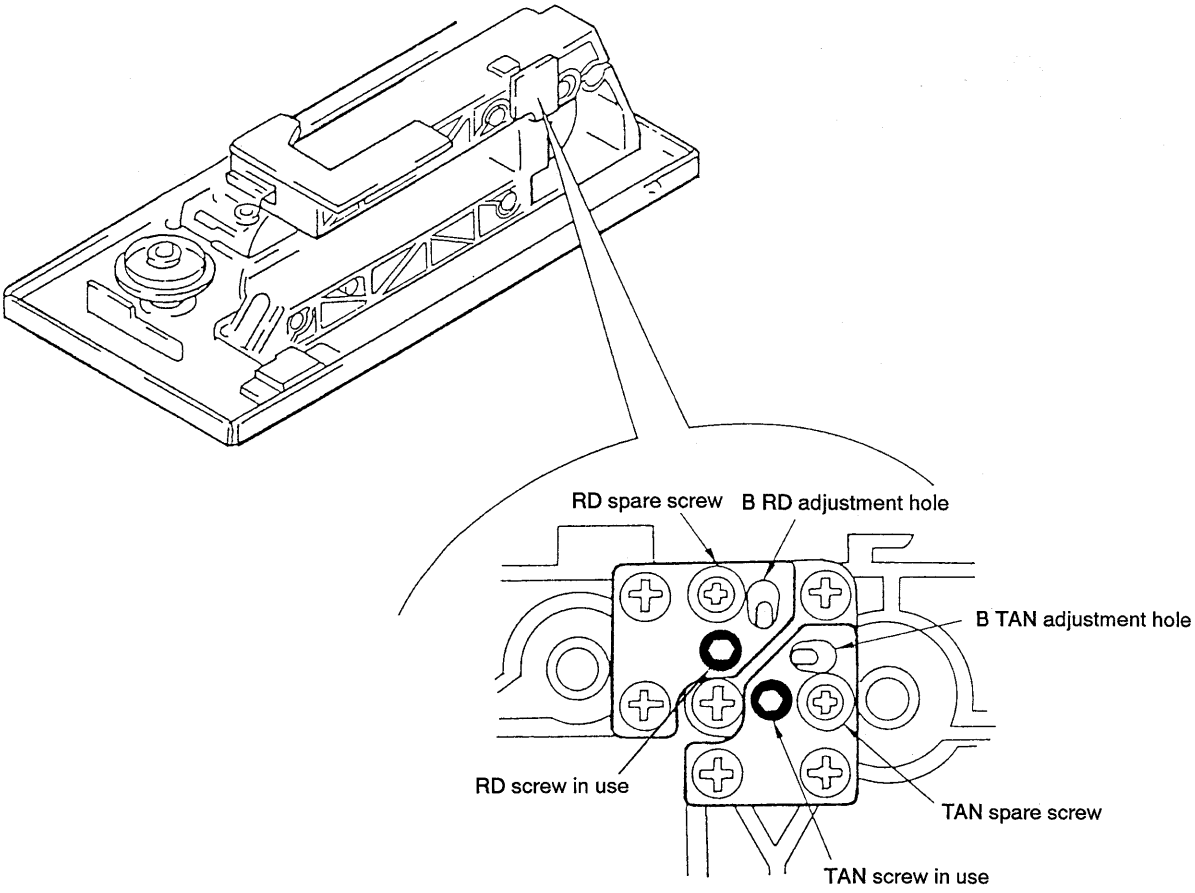
⑥ Forward the chapter 3 (#2201) and pause.

⑦ Turn off the SLED and tracking, and adjust inserting an eccentric screwdriver to B RD adjustment hole so that the Lissagous waveform meets the standard.



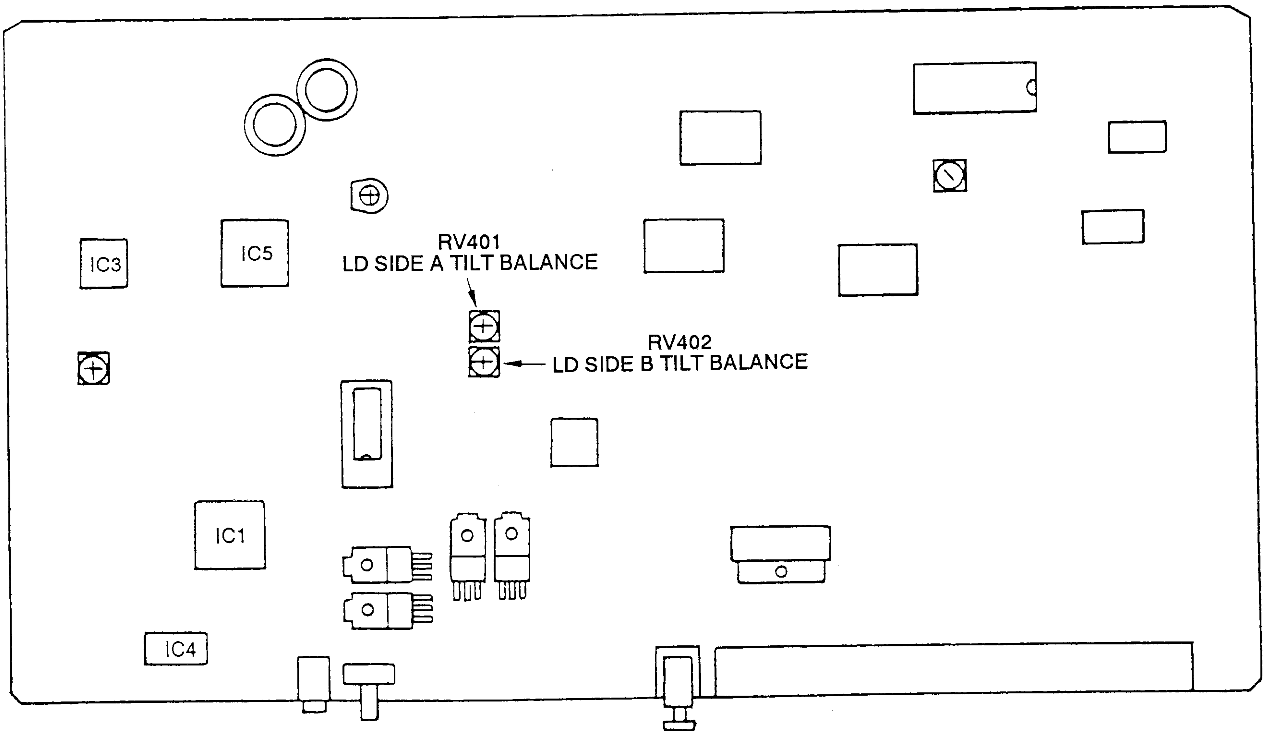
Jig terminal : E, F
Oscilloscope : X/Y lissagous 20 mV/div.
Phase difference : Within 35°

⑧ Take out the disc to tighten B TAN and RD screws.



2-5. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

MB-702 Board (Component Side)


IC3
IC5
RV401
LD SIDE A TILT BALANCE
RV402
LD SIDE B TILT BALANCE
IC1
IC4

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